



Learning Session #1

Data Driven Strategies for Reducing Hypertension Burden

June 6, 2024

1pm – 2pm

Housekeeping



This meeting
is being
recorded
and
transcribed.

By staying in the
meeting, you
automatically
consent to be
recorded.



Slides and
recording
will be
shared with
attendees
after today's
Learning
Session.



All attendee
video and
audio
functions
have been
disabled by
the host.



We
encourage
you to submit
your
questions
and
comments at
any time via
Mentimeter.

[Open Q&A](#)



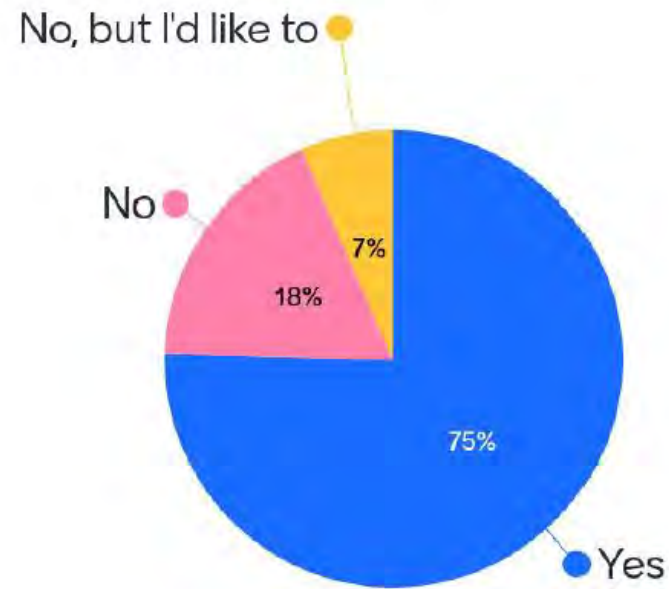
We
encourage
everyone to
participate
in the
collaborative
POLL
questions.

Call agenda

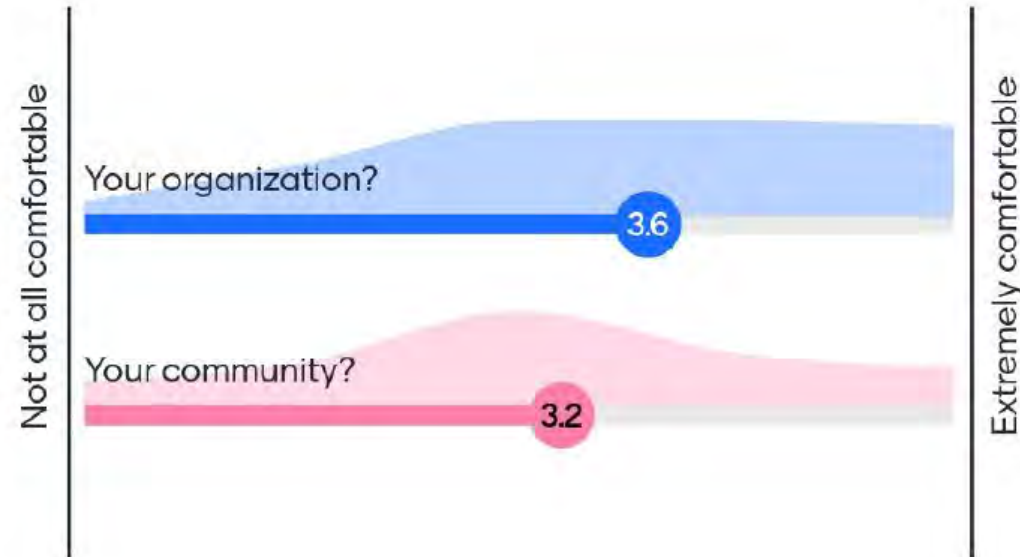
-
- Introduction and Welcome
-
- Housekeeping
-
- Mentimeter
-
- Level Set
-
- Presentations
-
- Q&A
-
- Close-Out & Next Steps

Mentimeter Poll

1. As part of your work, do you access or use cardiovascular health data?



2. How comfortable are you in accessing information about cardiovascular health as it pertains to:



3. What resources do you currently use for accessing cardiovascular health information?

Data Charlbook	Azara DRVS	PHOENIX	Azara DRVS	EHR	Oakland County Population Health tool (VDT)Internal EHR dataCounty Health Rankings for community data	N/A	HEDIS software, AHA, AA team data
EMR	UpToDate American Heart Association Krames	Data from MDHHS HDSP and CDC	SAP Business ObjectsUS Census	CDC, Athena, Michigan.gov	Healthplan data, EMR, Persivia	Internal software	Internally collected data, public databases
EHR	CDC	Not at all	Not sure	We have EMR capability, and are affiliated with AHA programming. We have recently completed retraining of staff, calibration of machines, and completing requested implementations and checklists.	MI Epidemiology	We are currently seeking resources.	CDC, Medicaid
Phoenix Database	EMR, HEDIS, CDC	CDC, EMR	HRSA website	AHA CDC NIH	Public data	EMR	Blood pressure screenings performed on siteHandouts available
Public data	Not sure	WW forms available with helpful information.	BRFSS, MDHHS, NKFM's data dashboard - including some HTN and CVD data.	EMR	CARDIOVASCULAR INFORMATION FROM BC3NP/WISEWOMAN PROGRAMHEALTH DEPARTMENT SCREENING	The massive number of incredible tracking resources!	NIH, organization-spread information.
CDC, Michigan BRFSS	EHR	WISEWOMAN FORMS	a	State, National, Sub-state, Medicaid data	Text books.	American Heart	Places, MiBRFSS, CDC BRFSS, hospitalization, ED, Medicaid
na	google	Google search	HRSA				

Learning Session – Level Set



HOW AND WHAT DATA SOURCES
ARE USED TO DETERMINE
HYPERTENSION BURDEN



HOW CLINICAL AND COMMUNITY-
DATA INFORMS POPULATION-LEVEL
DATA



HOW CLINICS AND COMMUNITY-
BASED ORGANIZATIONS CAN USE
POPULATION-LEVEL DATA TO INFORM
THEIR TREATMENT PRACTICES AND
PROGRAMMING

Phillip Levy, MD, MPH, FACEP, FAHA, FACC

- Professor of Emergency Medicine and Associate Vice President for Translational Science - Wayne State University
- Director, Wayne Mobile Health Unit Program



Data Driven Strategies for Reducing Hypertension Burden

Phillip D. Levy, MD MPH, FACEP, FAHA, FACC

Professor of Emergency Medicine and Associate Vice President for Translational Science - Wayne State University

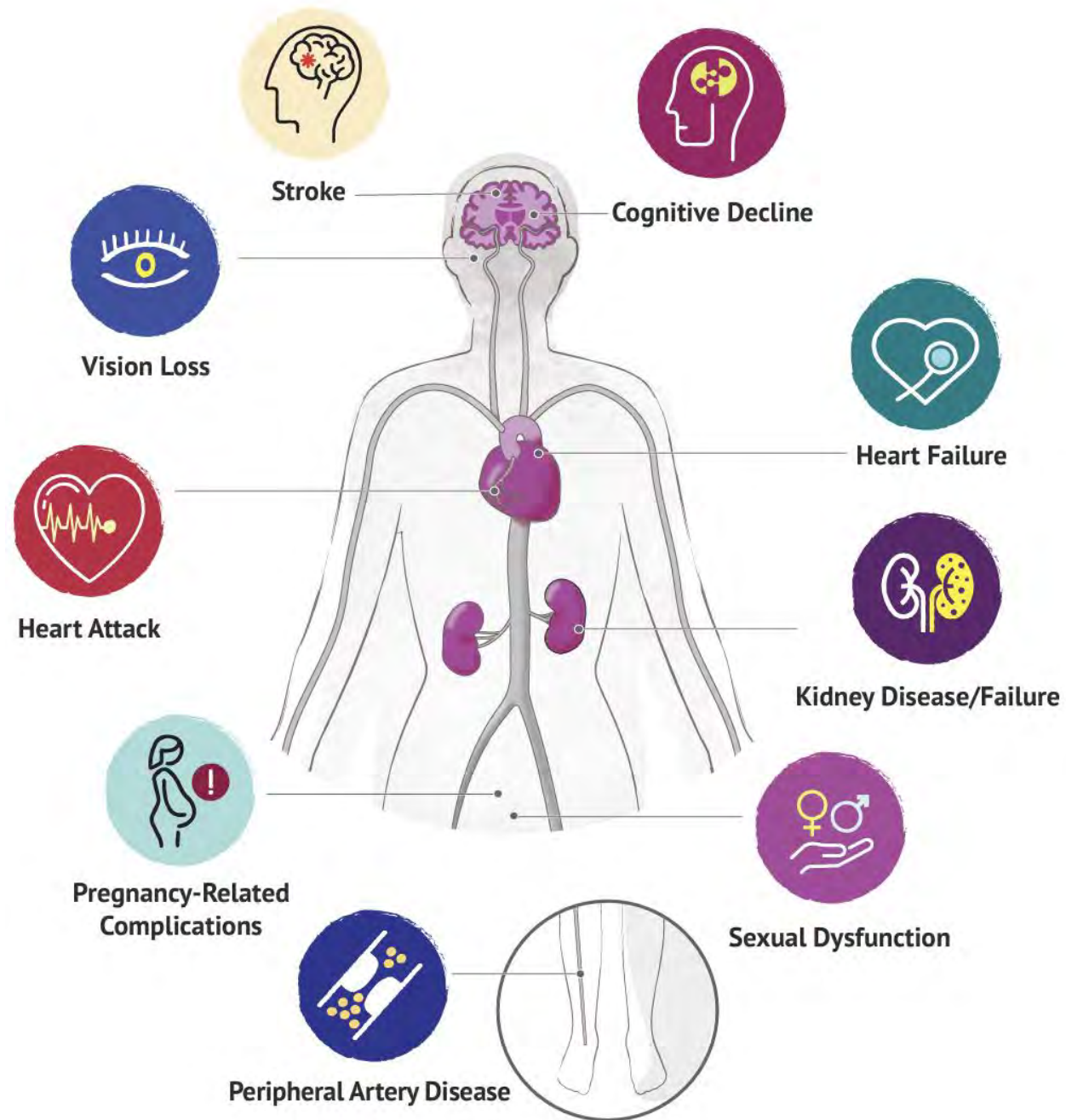
Director, Wayne Mobile Health Unit Program



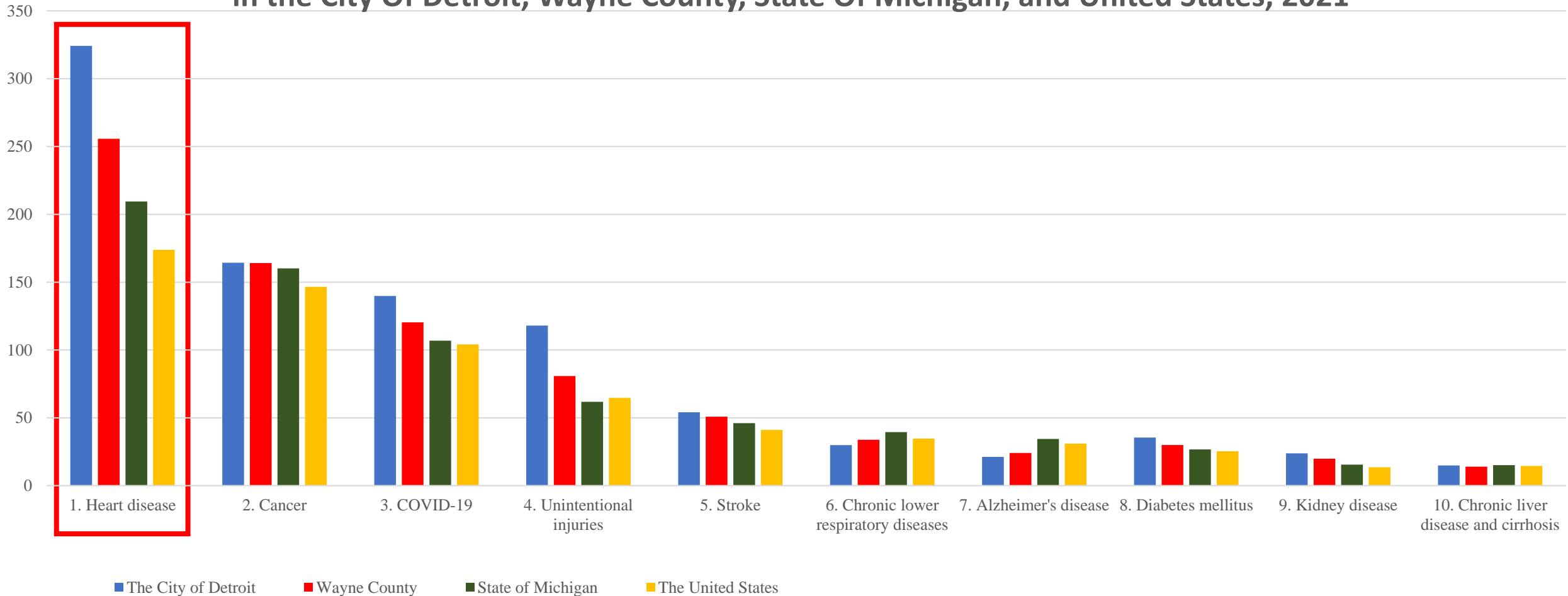
WAYNE STATE
UNIVERSITY

Relevant Disclosures

- NIH/NHLBI: R01 HL153607; R01 HL163377; R01 HL146059; R01 HL127215; T32 HL120822
- NIH/NIMHD: P50 MD017351 (ACHIEVE GREATER)
- AHA: RESTORE Health Equity Research Network (LEAP HTN); Collaboration for Equitable Health
- MDHHS: Mobile Health Unit; Michigan Mobile Health Corps; Promotion of Health Equity; CDC 1815, 1816, 1817, and 2304 programs
- Philanthropy: Bank of America; Ford Motor Company Fund; WK Kellogg Foundation; Cielo Fund; Michigan Health Endowment Fund; Delta Dental; Centene Charitable Foundation
- Consulting: Beckman Coulter; Pathfast; Siemens; Roche; Ortho Quidel; Tosoh Bioscience; UltraSight Medical; People.Health



Age-adjusted Mortality Rates/100,000 Population for the Ten Leading Causes Of Death in the City Of Detroit, Wayne County, State Of Michigan, and United States, 2021



Source: 2021 Geocoded Michigan Death Certificate Registry. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services. National Center for Health Statistics. NCHS Data Brief No. 456, 2022.



Division for Heart Disease and Stroke Prevention

CDC > Heart Disease and Stroke Maps and Data

Interactive Atlas Home

[View Tables](#)

[Sample Maps](#)

[Instructions for Using the Atlas](#)

[Data Sources](#)

[Statistical Methods](#)

Other DHDSP Web Sites



[Heart Disease](#)

[Stroke](#)

[High Blood Pressure](#)

[Cholesterol](#)

[Million Hearts®](#)

[WISEWOMAN](#)

Interactive Atlas of Heart Disease and Stroke

[Print](#)

CDC's Interactive Atlas of Heart Disease and Stroke is an online mapping tool that allows users to create and customize county-level maps of heart disease and stroke by race and ethnicity, gender, age group, and more.

Launch the Interactive Atlas

Select one of the buttons below to view a map of the complete US, or select a state/territory in the map or from the dropdown below.

US Map - County Level

US Map - State Level





Interactive Atlas of Heart Disease and Stroke

Heart Disease Death Rate per 100,000, All Races/Ethnicities, All Genders, Ages 35+, 2019-2021

Compare Layers View 2nd Map Maps over Time PDF/IMG Create Report Export Download GIS Data Create Link Reset Maps Help Feedback

Select Map Area:

US Map - County Level

Select a state to view Census Tract data.

Select data and filter options:

Mortality, Hospitalization (state, county)

Total Cardiovascular Disease

All Heart Disease

Death Rate, 2019+

2019-2021 All Races/Ethnicities
All Genders Ages 35+
Smoothed

Apply Filters

Death Rate, pre-2019

Hospitalizations

Hospital Discharge Status

Coronary Heart Disease

Heart Attack

Cardiac Dysrhythmia

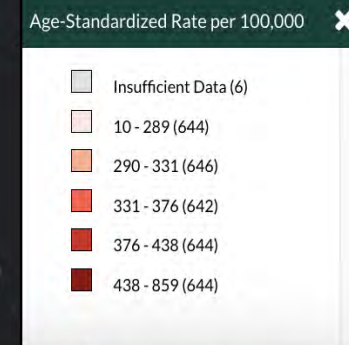
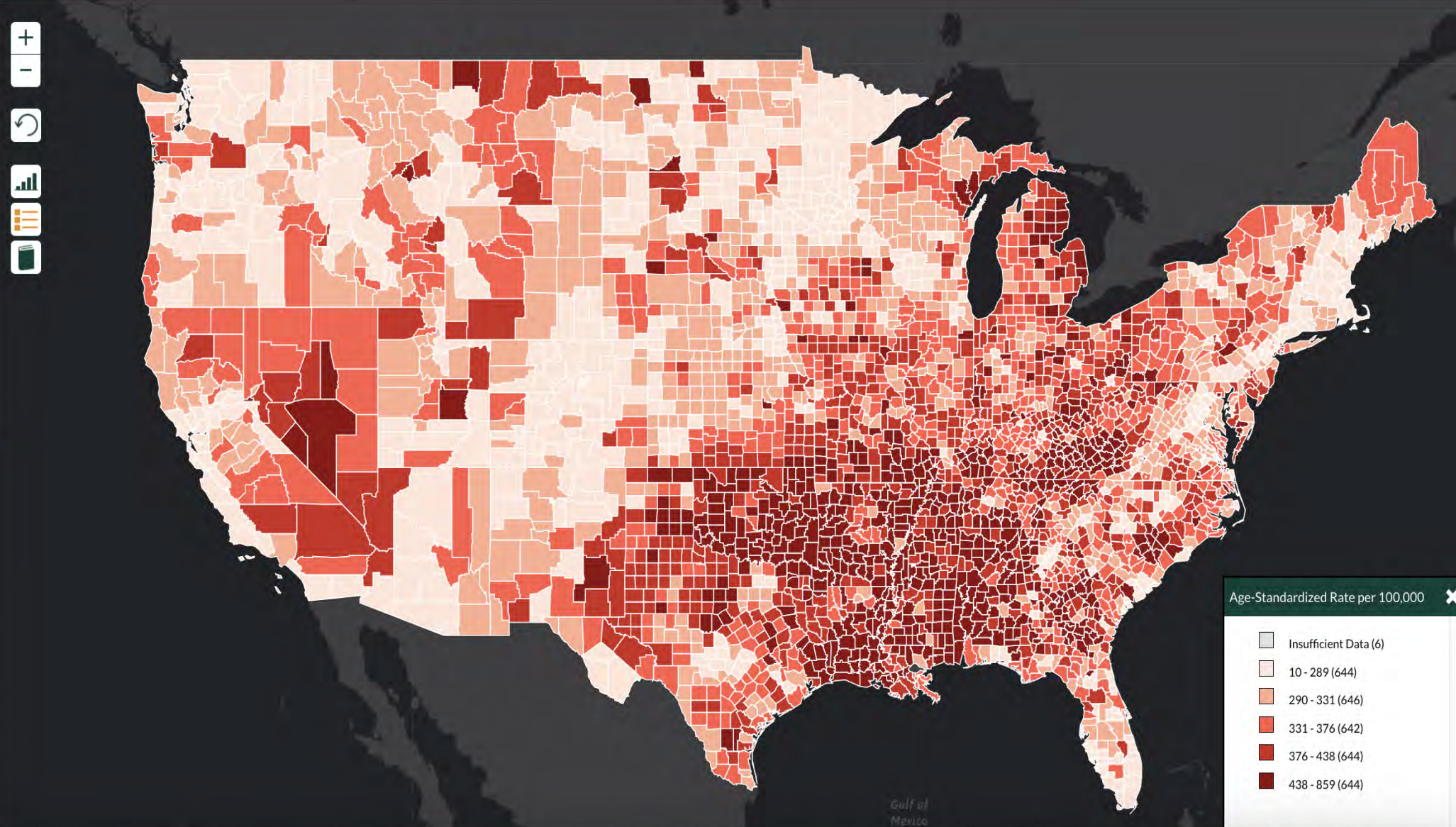
Atrial Fibrillation

Heart Failure

High Blood Pressure

All Stroke

Ischemic Stroke





Interactive Atlas of Heart Disease and Stroke

Heart Disease Death Rate per 100,000, White (Non-Hispanic), All Genders, Ages 35+, 2019-2021

Compare Layers View 2nd Map Maps over Time PDF/IMG Create Report Export Download GIS Data Create Link Reset Maps Help Feedback

Select Map Area:

US Map - County Level

Select a state to view Census Tract data.

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Total Cardiovascular Disease

All Heart Disease

Death Rate, 2019+

2019-2021 White (Non-Hispanic)

All Genders Ages 35+

Smoothed

Apply Filters

Death Rate, pre-2019

Hospitalizations

Hospital Discharge Status

Coronary Heart Disease

Heart Attack

Cardiac Dysrhythmia

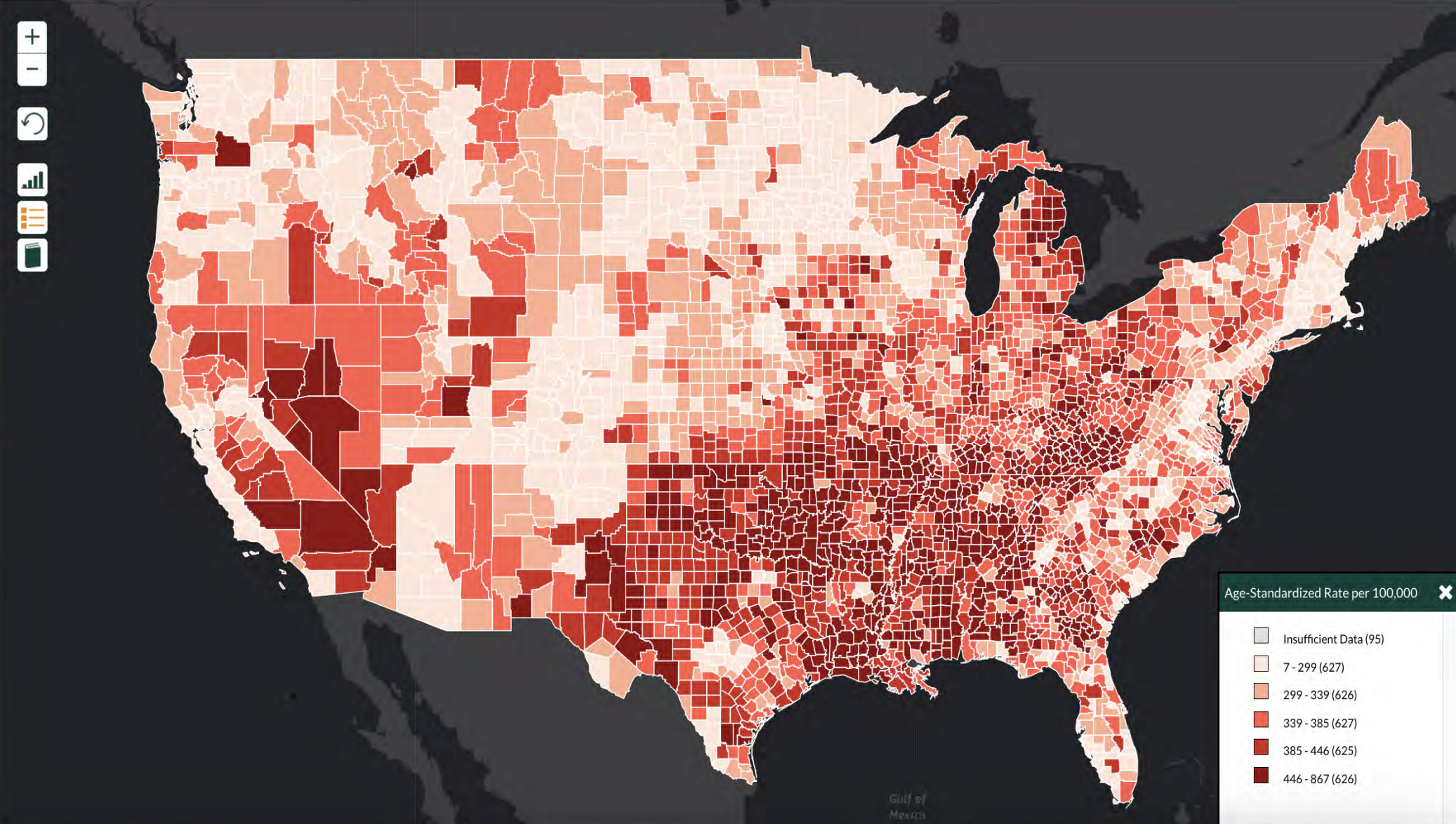
Atrial Fibrillation

Heart Failure

High Blood Pressure

All Stroke

Ischemic Stroke



Interactive Atlas of Heart Disease and Stroke

Heart Disease Death Rate per 100,000, Black (Non-Hispanic), All Genders, Ages 35+, 2019-2021

 Compare Layers  View 2nd Map  Maps over Time  PDF/IMG  Create Report  Export  Download GIS Data  Create Link  Reset Maps  Help  Feedback

Select Map Area:

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Death Rate, 2019+

2019-2021 Black (Non-Hispanic)

All Genders Ages 35+

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Death Rate, pre-2019

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Hospital Discharge Status

Coronary Heart Disease +

Heart Attack +

Cardiac Dysrhythmia +

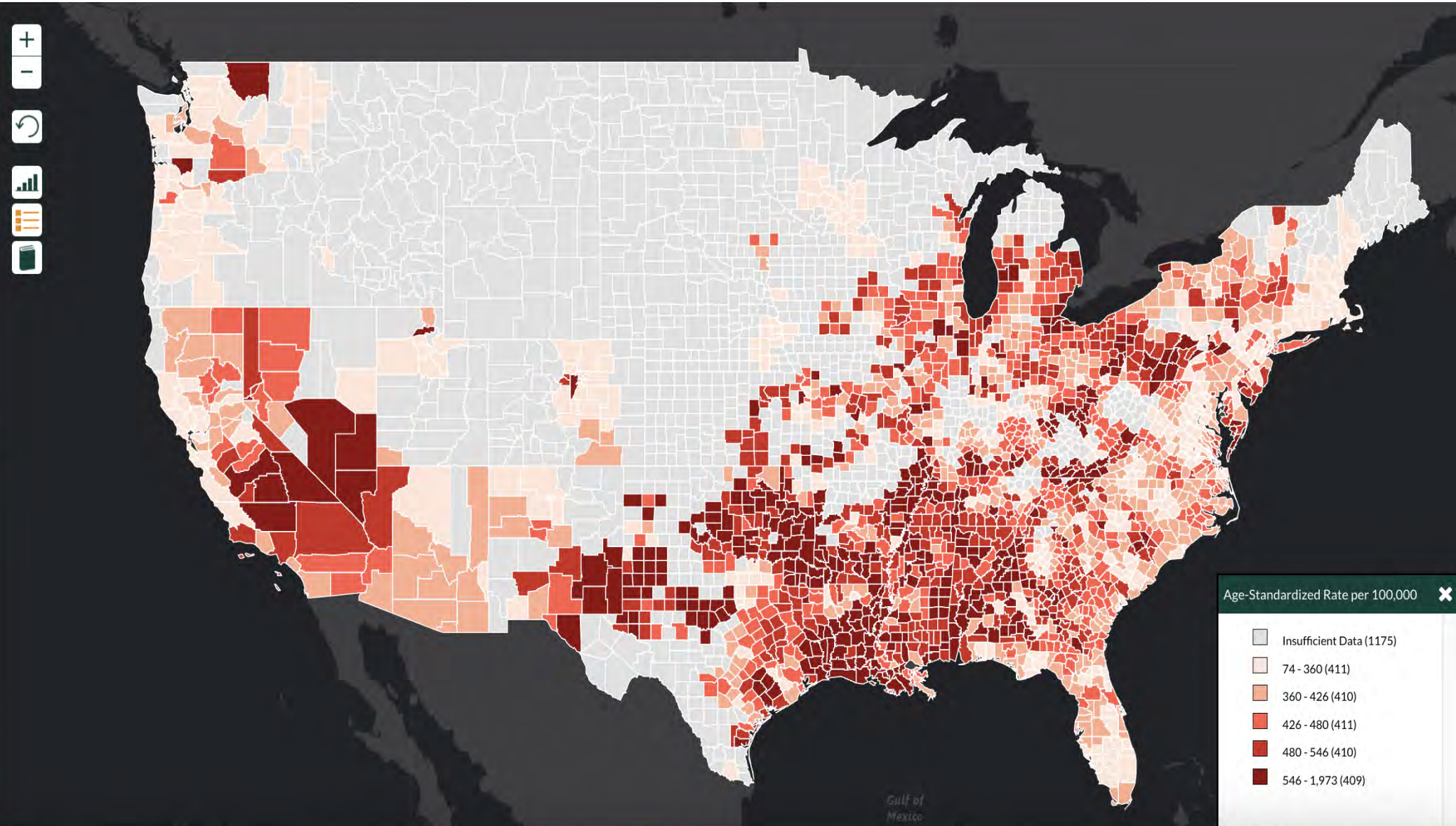
Atrial Fibrillation +

Heart Failure +

High Blood Pressure +

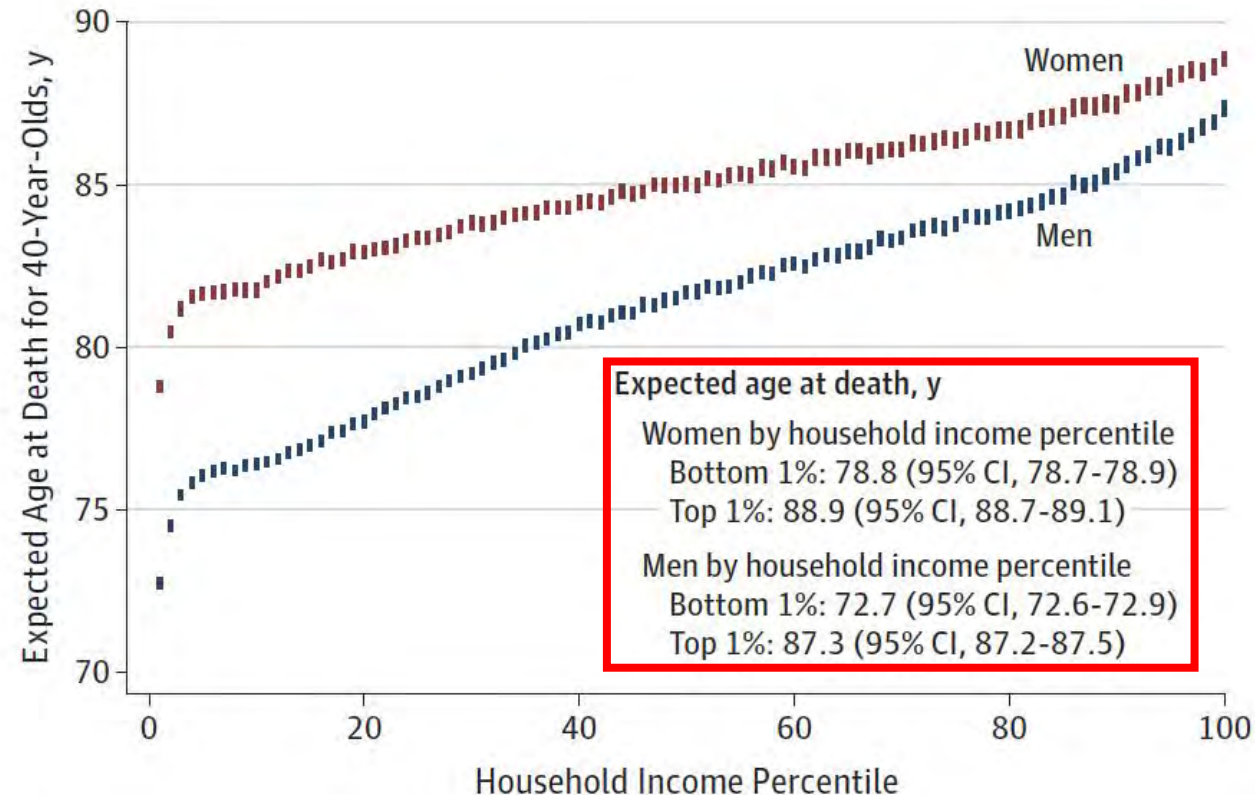
All Stroke +

Ischemic Stroke +



The Association Between Income and Life Expectancy in the United States, 2001-2014

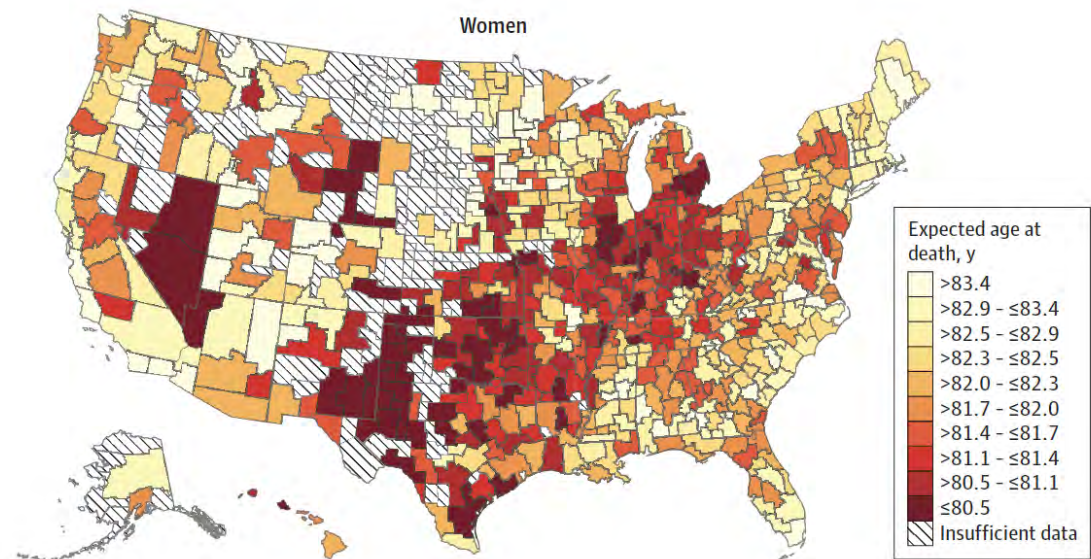
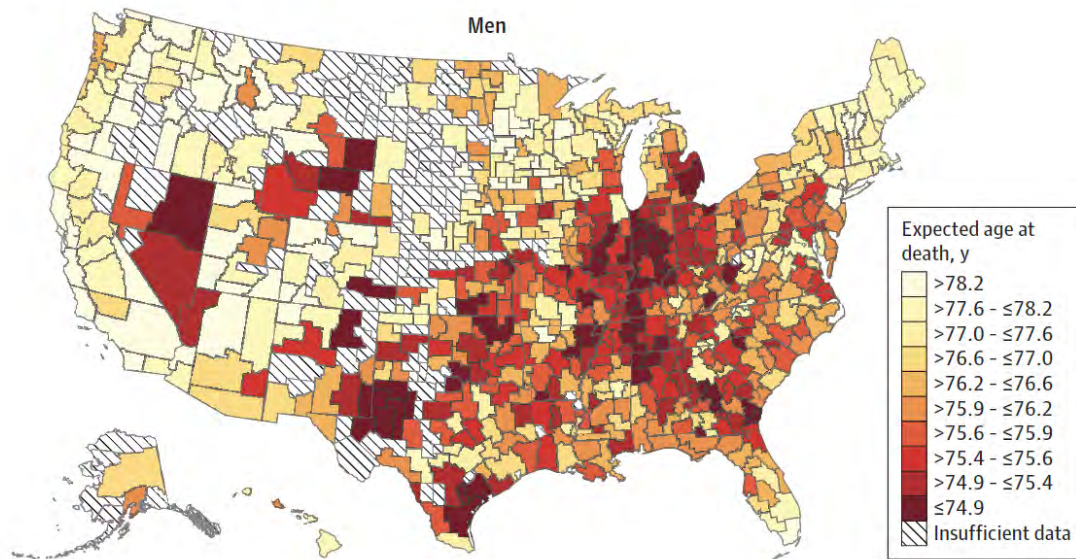
Raj Chetty, PhD; Michael Stepner, BA; Sarah Abraham, BA; Shelby Lin, MPhil; Benjamin Scuderi, BA; Nicholas Turner, PhD; Augustin Bergeron, MA; David Cutler, PhD



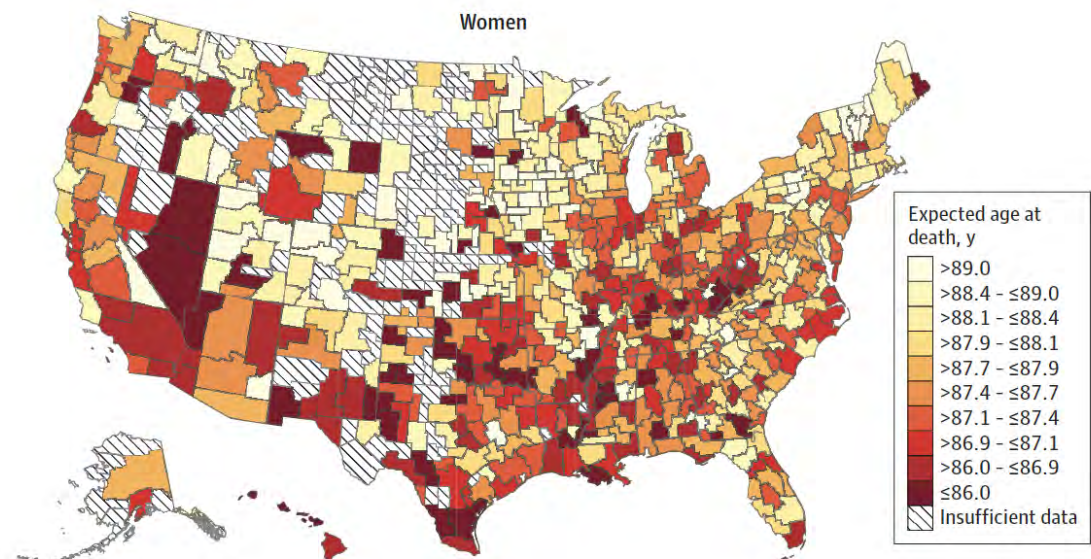
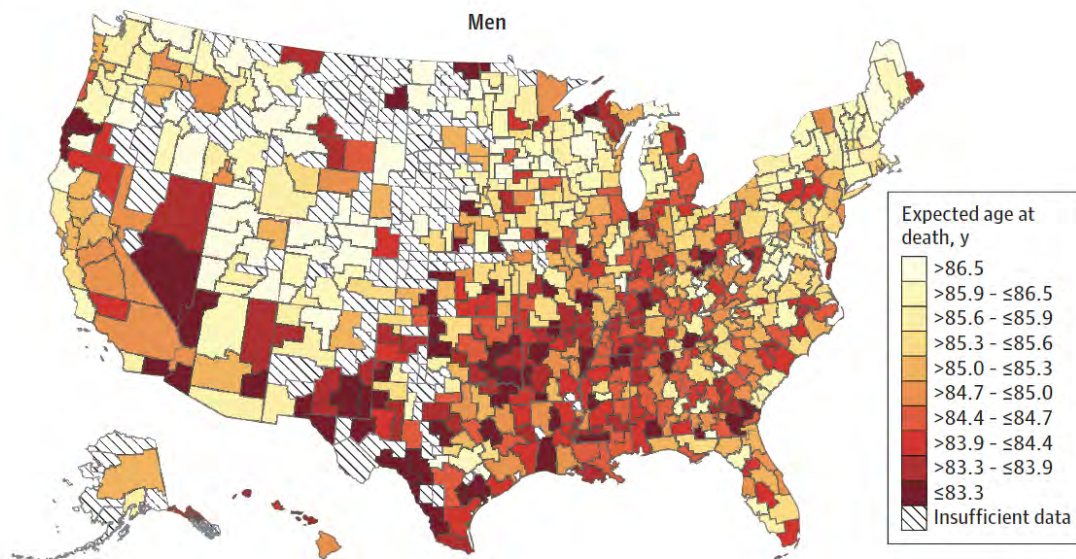
Mean household income
in thousands, \$^a

Women	24	45	71	112	1.9 million
Men	26	50	77	119	2.0 million

A Life expectancy for bottom income quartile



B Life expectancy for top income quartile





Interactive Atlas of Heart Disease and Stroke

Heart Disease Death Rate per 100,000, All Races/Ethnicities, All Genders, Ages 35+, 2019-2021

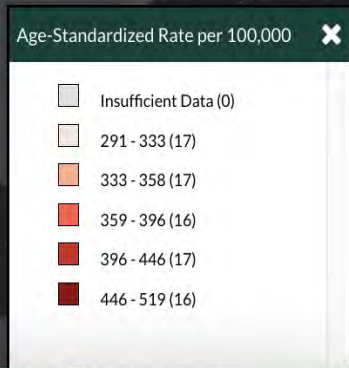
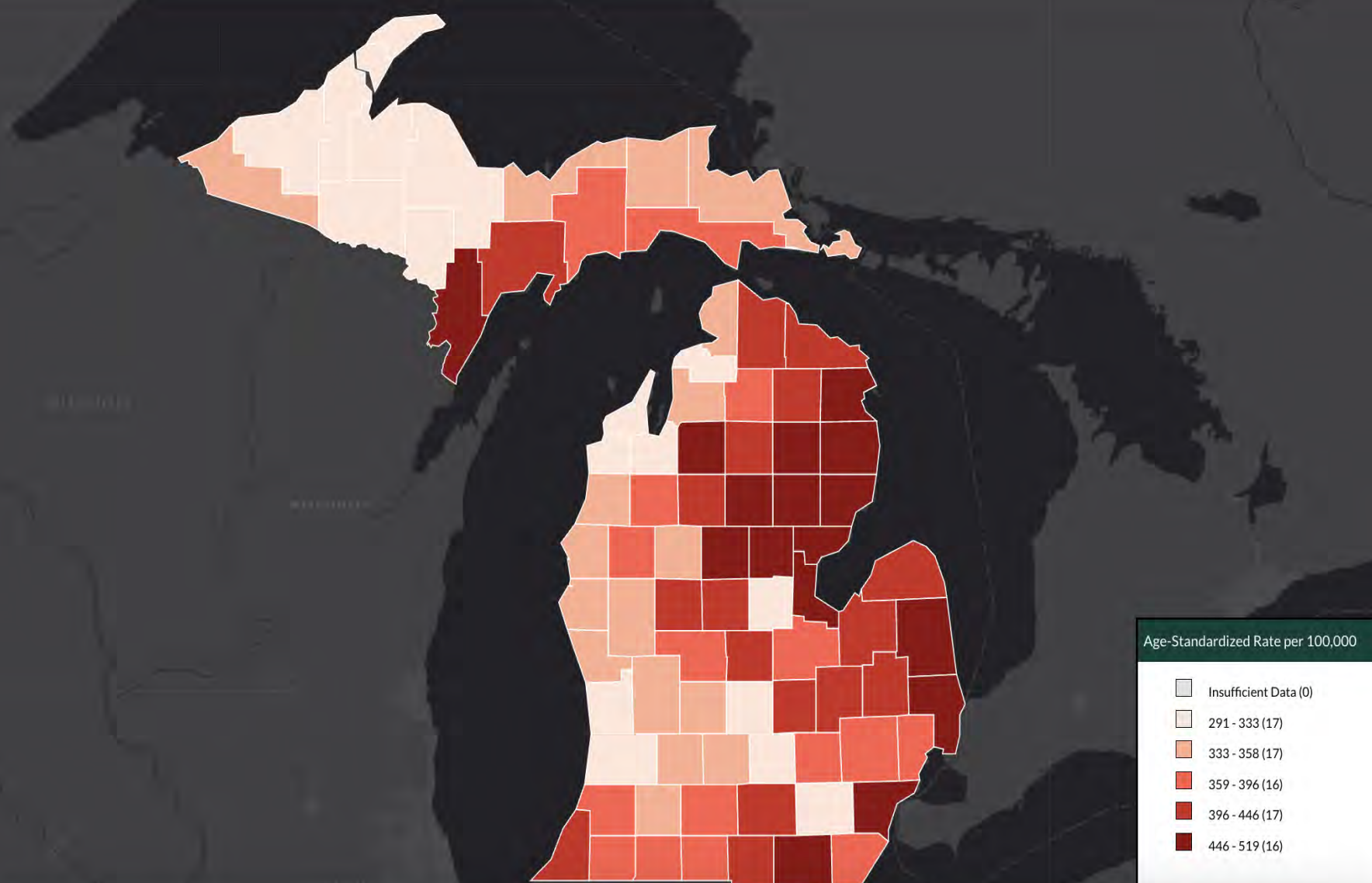
Compare Layers View 2nd Map Maps over Time PDF/IMG Create Report Export Download GIS Data Create Link Reset Maps Help Feedback

Select Map Area:
Michigan
☒ Show Counties ☐ Show Census Tracts

Select data and filter options:
Mortality, Hospitalization (state,county) -
Total Cardiovascular Disease +
All Heart Disease -

Death Rate, 2019+
2019-2021 All Races/Ethnicities
All Genders Ages 35+
Smoothed
Apply Filters

Death Rate, pre-2019
Hospitalizations
Hospital Discharge Status
Coronary Heart Disease +
Heart Attack +
Cardiac Dysrhythmia +
Atrial Fibrillation +
Heart Failure +
High Blood Pressure +
All Stroke +
Ischemic Stroke +





Interactive Atlas of Heart Disease and Stroke

Heart Disease Death Rate per 100,000, White (Non-Hispanic), All Genders, Ages 35+, 2019-2021

- Compare Layers
- View 2nd Map
- Maps over Time
- PDF/IMG
- Create Report
- Export
- Download GIS Data
- Create Link
- Reset Maps
- Help
- Feedback

Select Map Area:

Michigan

☒ Show Counties ☐ Show Census Tracts

Select data and filter options:

Mortality, Hospitalization (state,county)

Total Cardiovascular Disease

All Heart Disease

Death Rate, 2019+

2019-2021

White (Non-Hispanic)

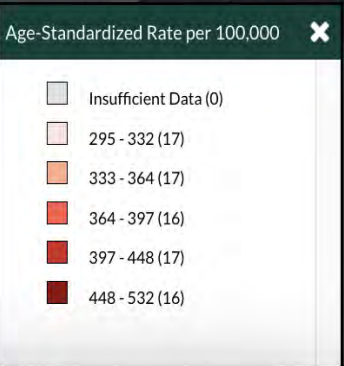
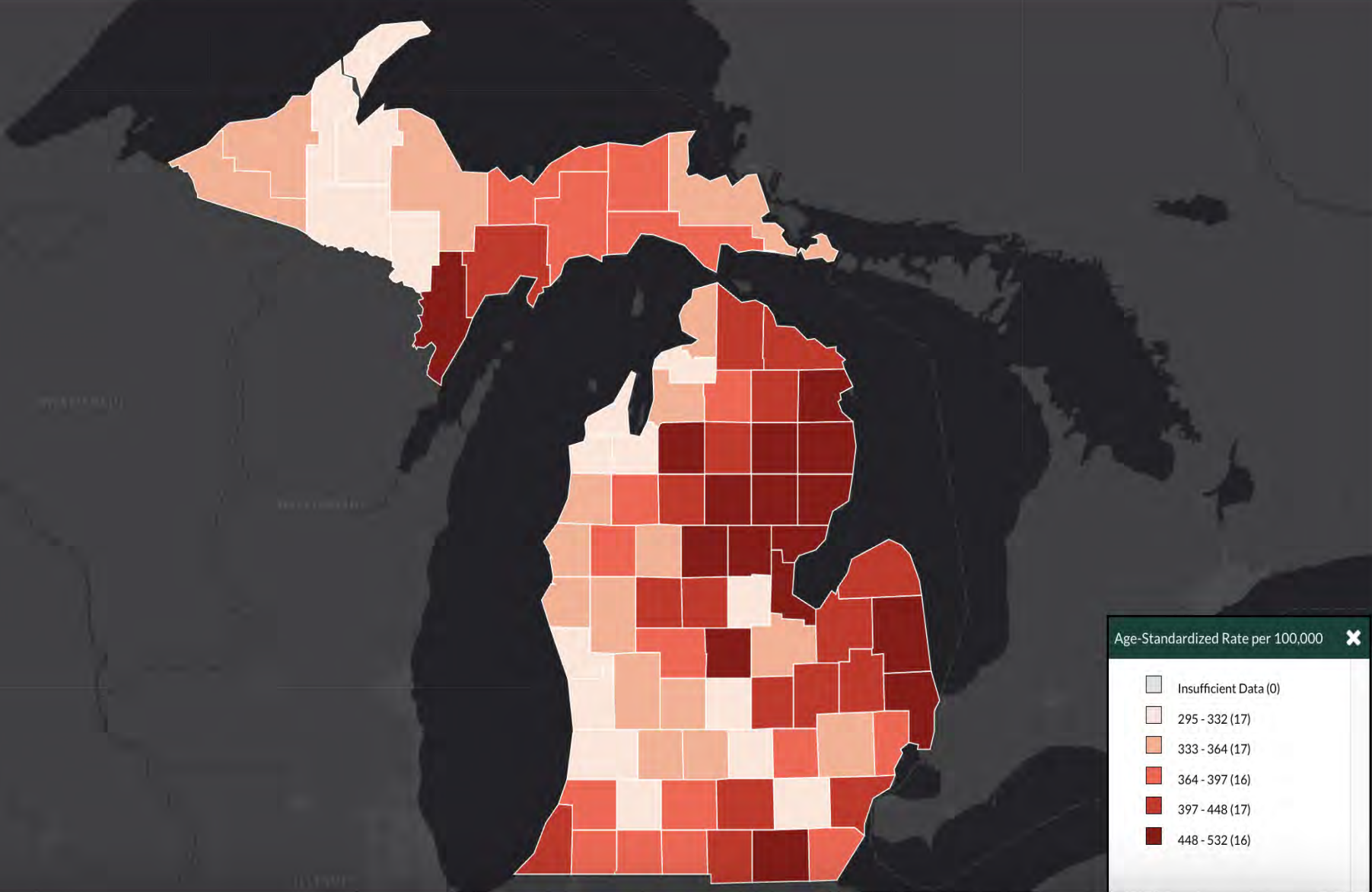
All Genders

Ages 35+

Smoothed

Apply Filters

- Death Rate, pre-2019
- Hospitalizations
- Hospital Discharge Status
- Coronary Heart Disease
- Heart Attack
- Cardiac Dysrhythmia
- Atrial Fibrillation
- Heart Failure
- High Blood Pressure
- All Stroke
- Ischemic Stroke





Interactive Atlas of Heart Disease and Stroke

Heart Disease Death Rate per 100,000, Black (Non-Hispanic), All Genders, Ages 35+, 2019-2021

Compare Layers View 2nd Map Maps over Time PDF/IMG Create Report Export Download GIS Data Create Link Reset Maps Help Feedback

Select Map Area:

Michigan

☒ Show Counties ☐ Show Census Tracts

Select data and filter options:

Mortality, Hospitalization (state,county) -

Total Cardiovascular Disease +

All Heart Disease -

Death Rate, 2019+

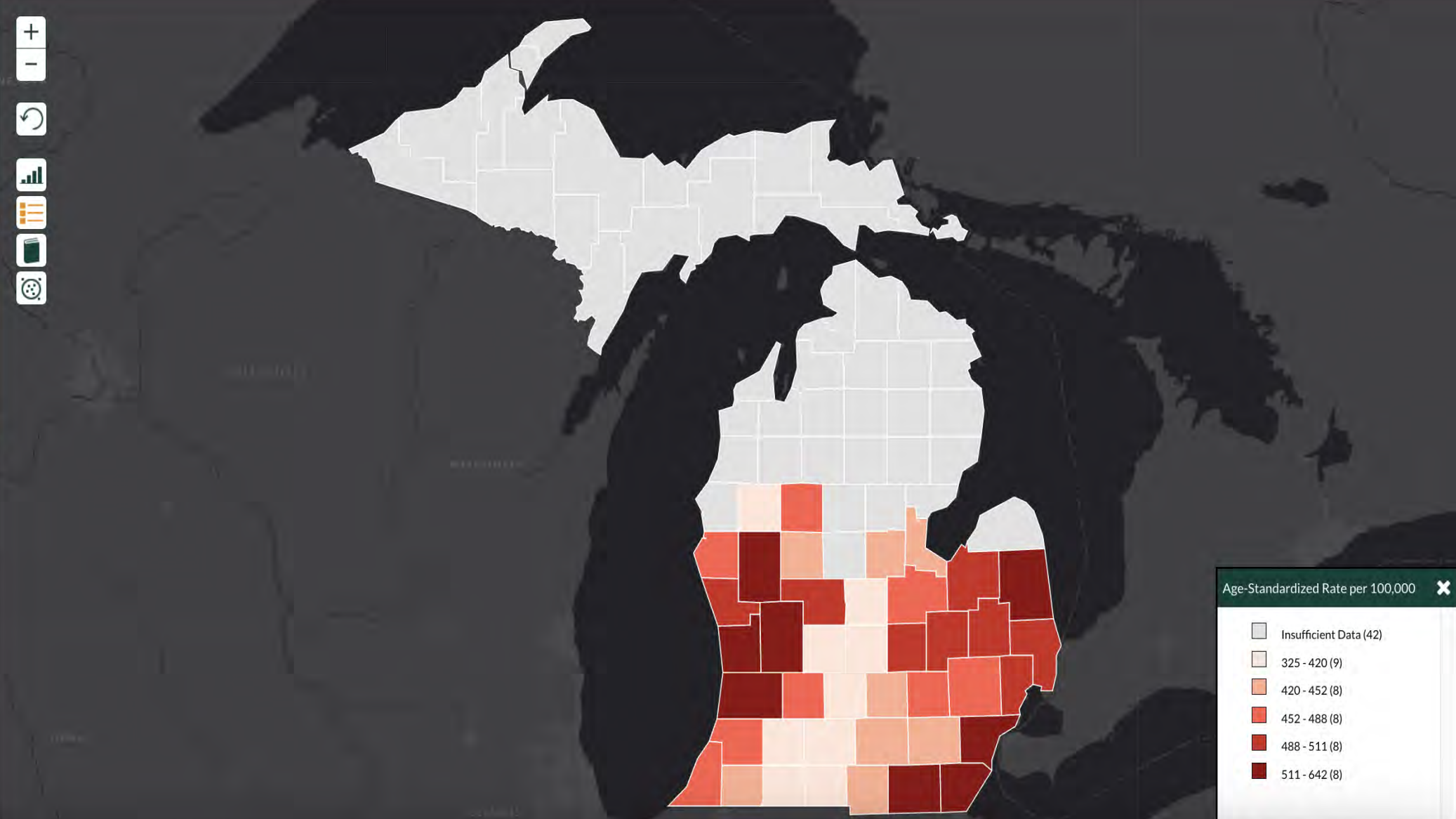
2019-2021 Black (Non-Hispanic)

All Genders Ages 35+

Smoothed

Apply Filters

- Death Rate, pre-2019
- Hospitalizations
- Hospital Discharge Status
- Coronary Heart Disease +
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- Cardiac Dysrhythmia +
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- Heart Failure +
- High Blood Pressure +
- All Stroke +
- Ischemic Stroke +





Interactive Atlas of Heart Disease and Stroke

Heart Disease Death Rate per 100,000, White (Non-Hispanic), All Genders, Ages 35+, 2019-2021

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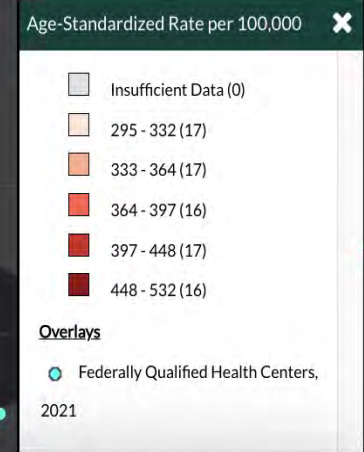
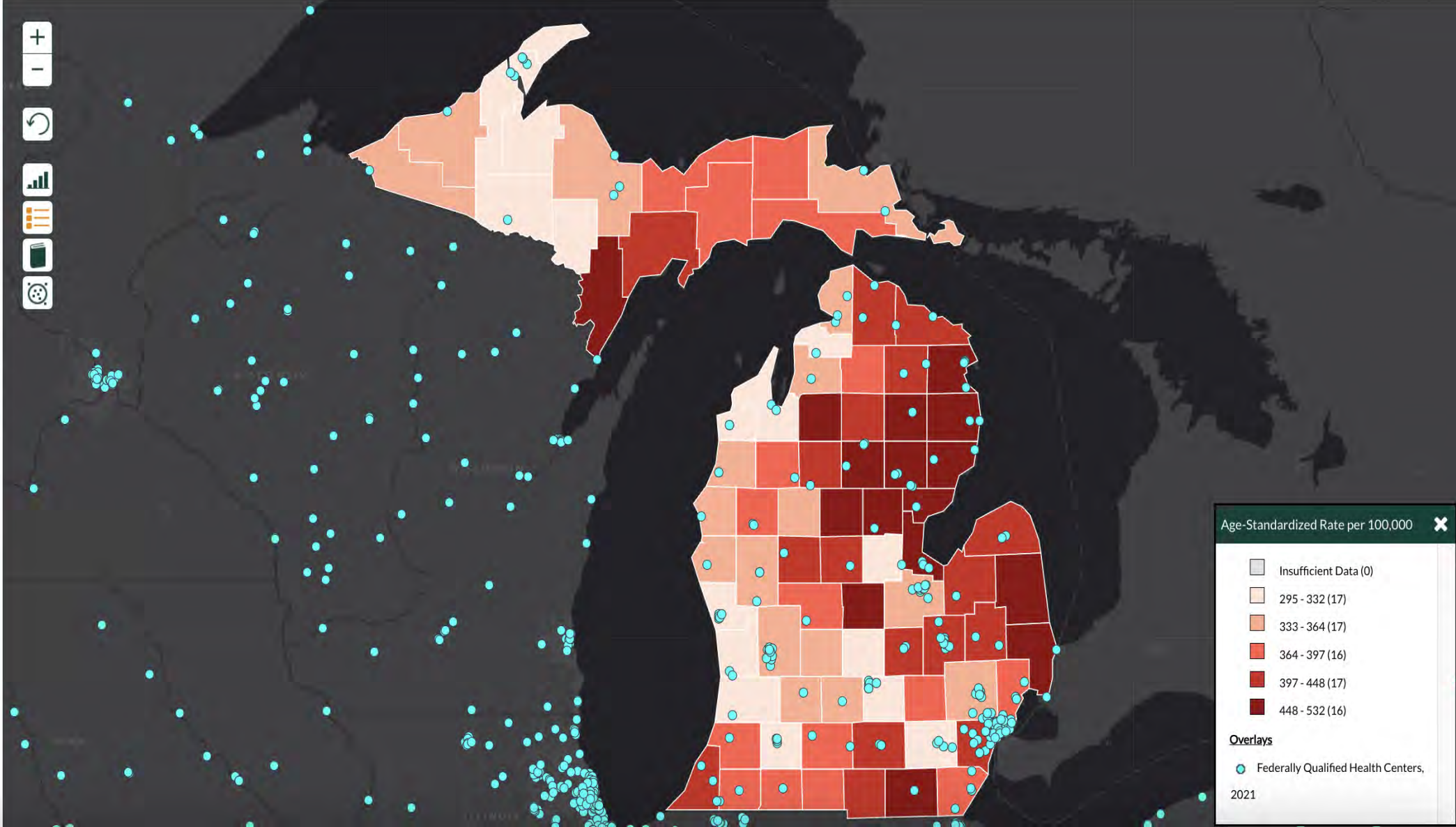
Michigan

☒ Show Counties ☐ Show Census Tracts

Select data and filter options:

- Mortality, Hospitalization (state,county) +
- Prevalence (county,census tract) +
- Risk Factors (county,census tract) +
- Social, Economic, Environmental Data +
- Demographics (county,census tract) +
- Health Care Delivery and Insurance +
- Health Care Costs (county) +
- Overlay Features -
- Health Centers -
- Federally Qualified Health Centers, 2021
- Hospitals with Listed Services +
- Stroke Centers by Certification +
- Roads and Cities +
- Other Boundaries +
- Highlight by County Characteristics +

[View Tables](#)





Interactive Atlas of Heart Disease and Stroke

Heart Disease Death Rate per 100,000, White (Non-Hispanic), All Genders, Ages 35+, 2019-2021

Compare Layers View 2nd Map Maps over Time PDF/IMG Create Report Export Download GIS Data Create Link Reset Maps Help Feedback

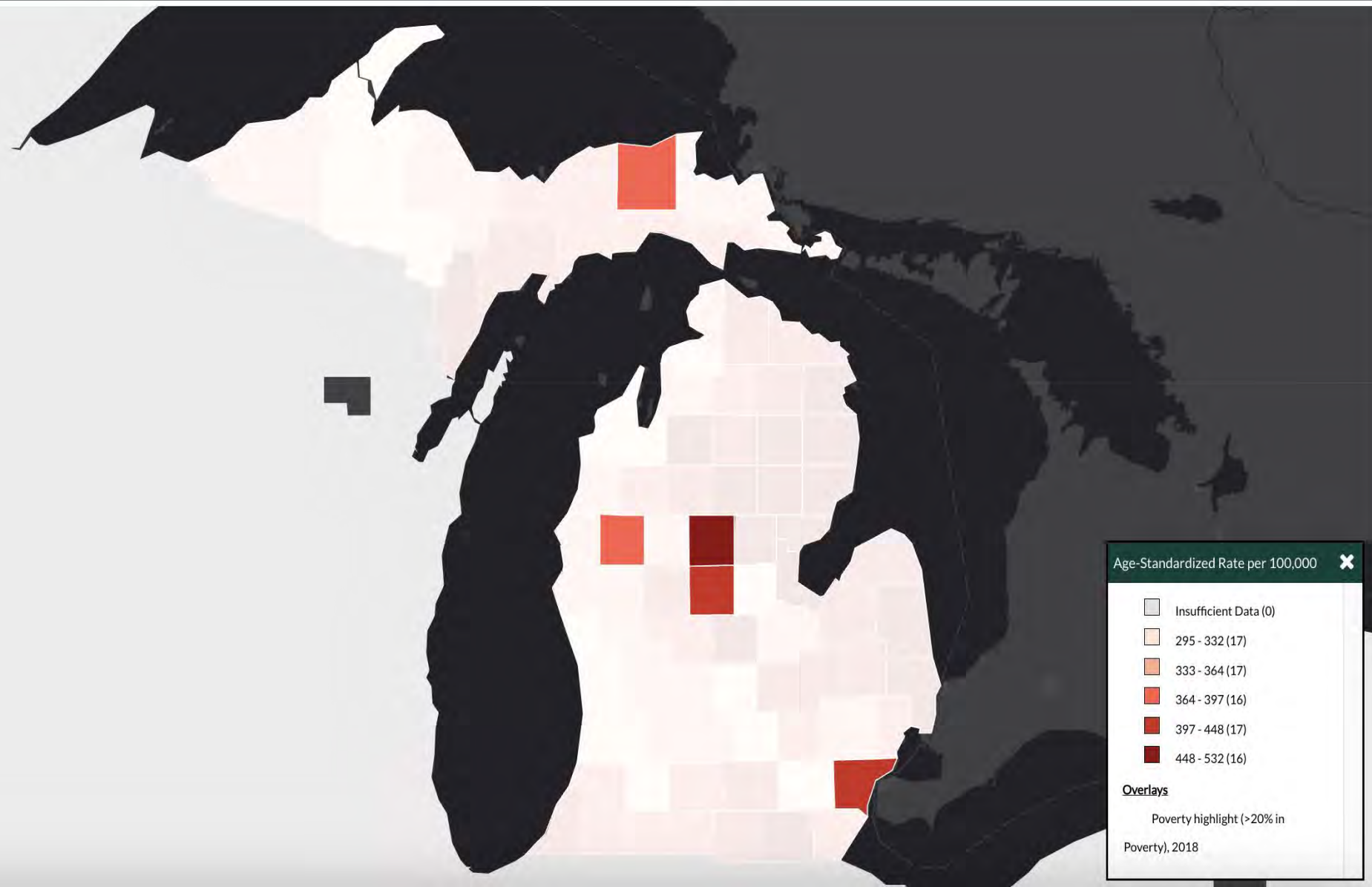
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- Health Centers -
- Federally Qualified Health Centers, 2021
- Hospitals with Listed Services +
- Stroke Centers by Certification +
- Roads and Cities +
- Other Boundaries +
- Highlight by County Characteristics -
- Nonmetro Counties
- Medium/Small Metro Counties
- Large Metro Counties
- Counties with >20% Living in Poverty,



Age-Standardized Rate per 100,000

- Insufficient Data (0)
- 295 - 332 (17)
- 333 - 364 (17)
- 364 - 397 (16)
- 397 - 448 (17)
- 448 - 532 (16)

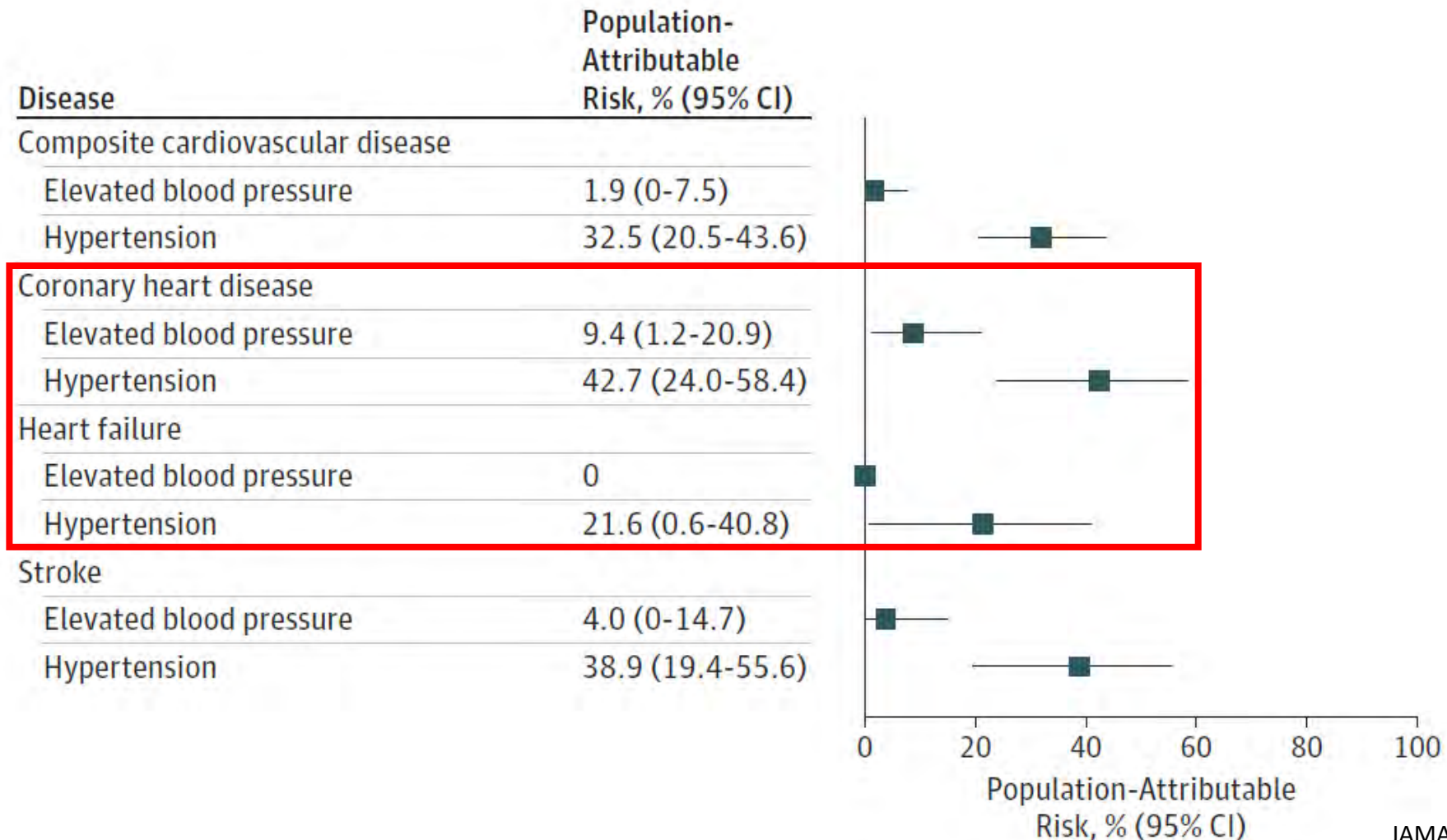
Overlays

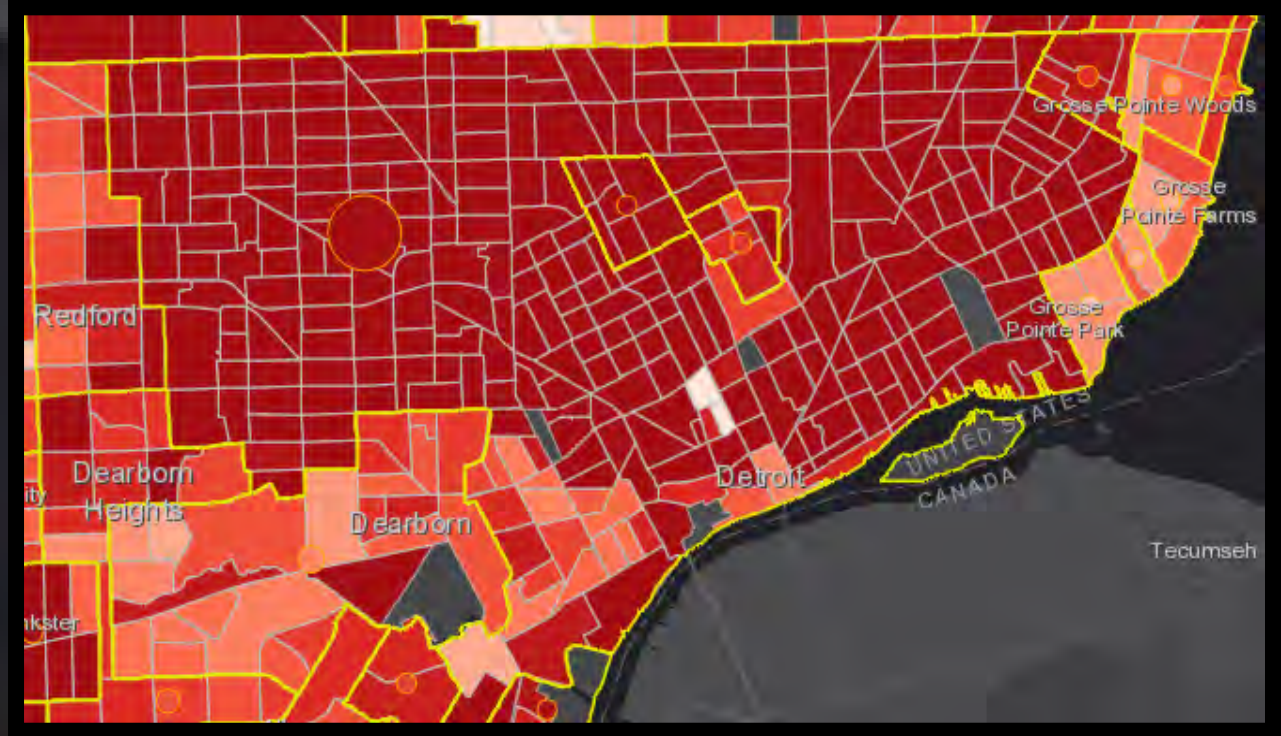
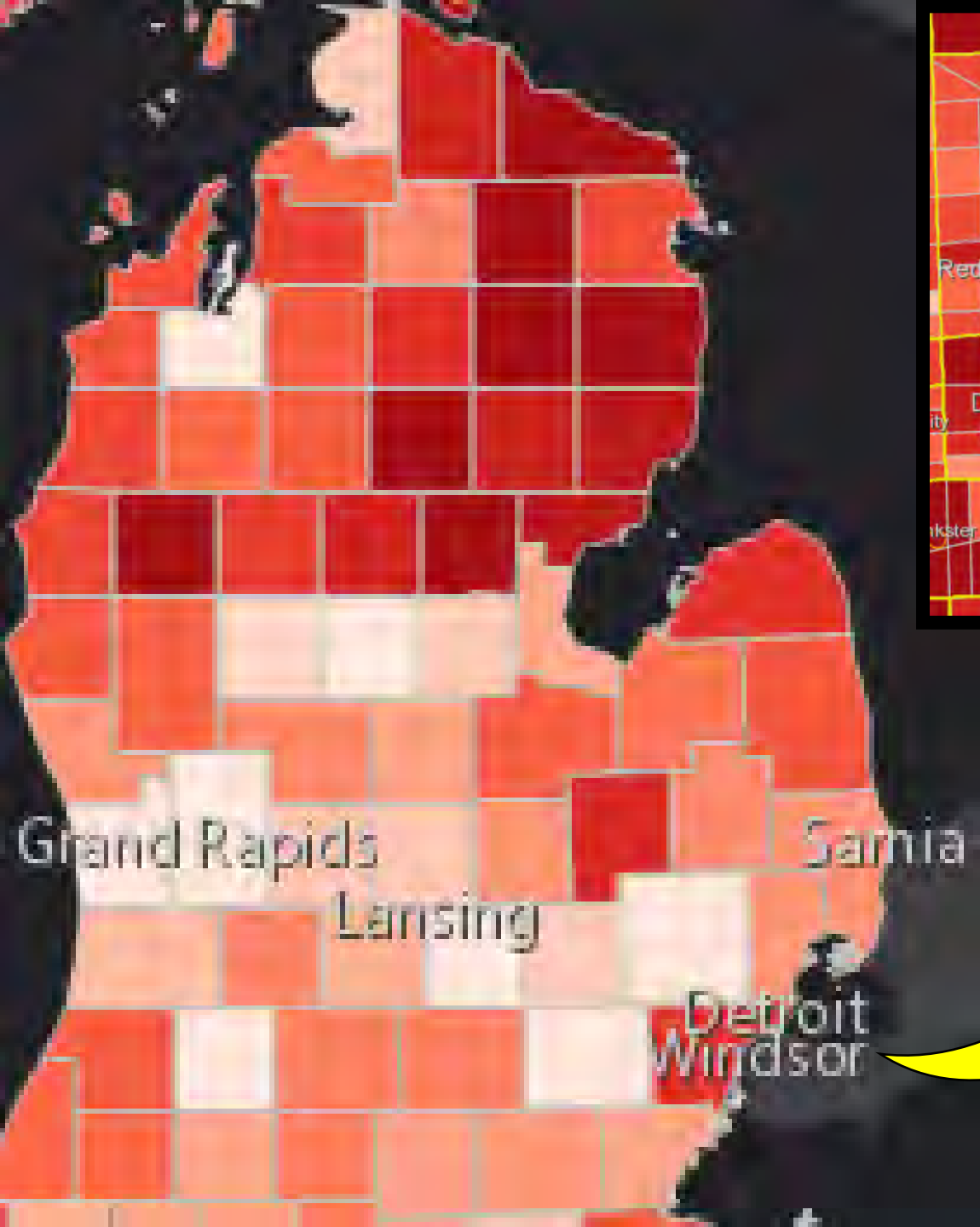
Poverty highlight (>20% in Poverty), 2018

Population-Attributable Risk for Cardiovascular Disease Associated With Hypertension in Black Adults

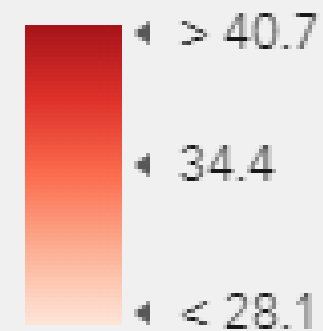
Jackson Heart Study (JHS)

Reasons for Geographic and Racial Differences in Stroke (REGARDS) study





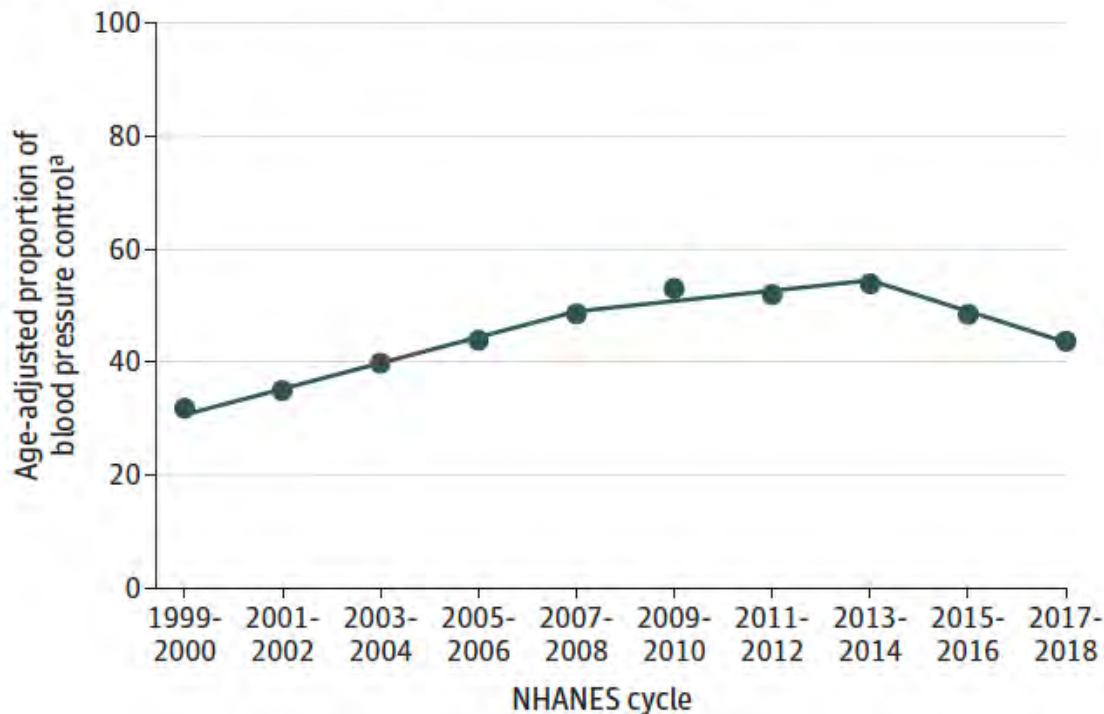
High blood pressure crude prevalence (%)



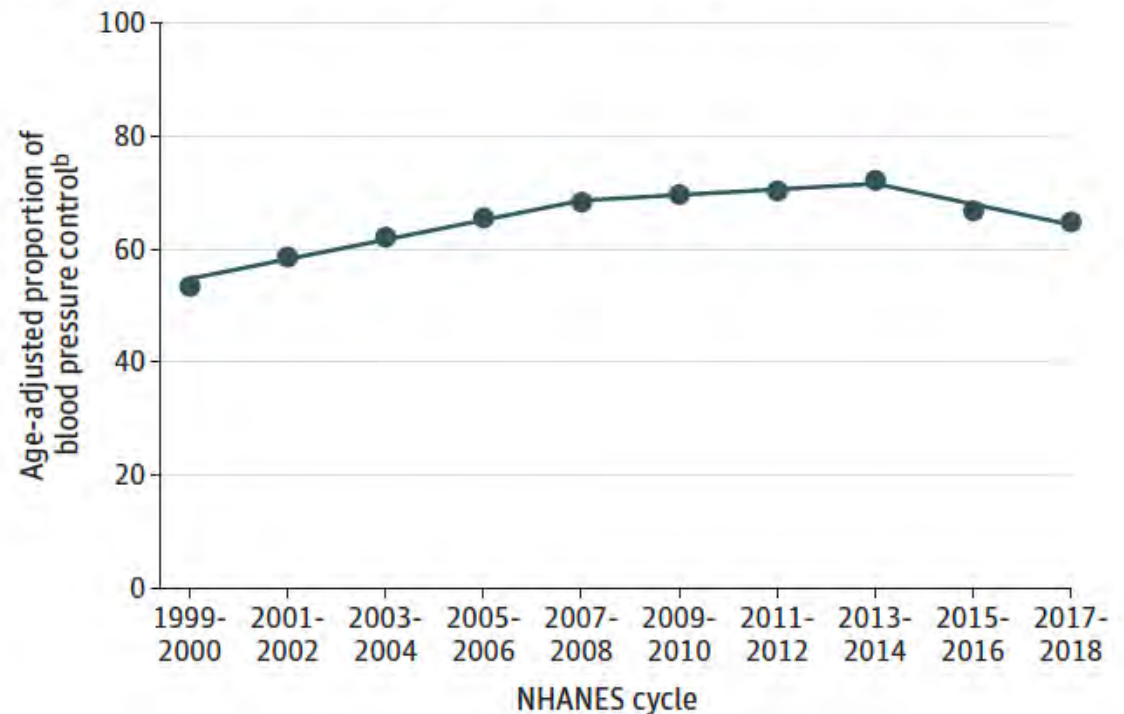
Trends in Blood Pressure Control Among US Adults With Hypertension, 1999-2000 to 2017-2018

Paul Muntner, PhD; Shakia T. Hardy, PhD; Lawrence J. Fine, MD; Byron C. Jaeger, PhD; Gregory Wozniak, PhD;
Emily B. Levitan, ScD; Lisandro D. Colantonio, MD, PhD

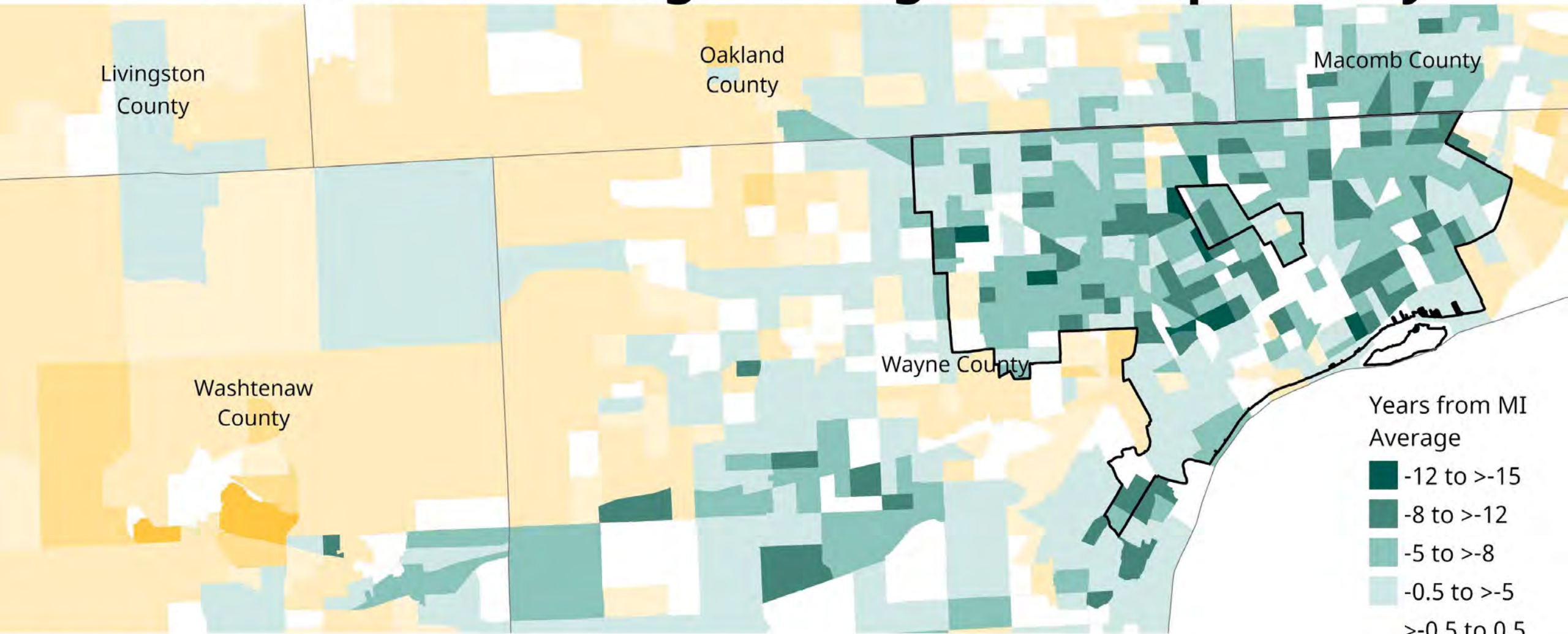
A Blood pressure control among all adults with hypertension



B Blood pressure control among adults taking antihypertensive medication

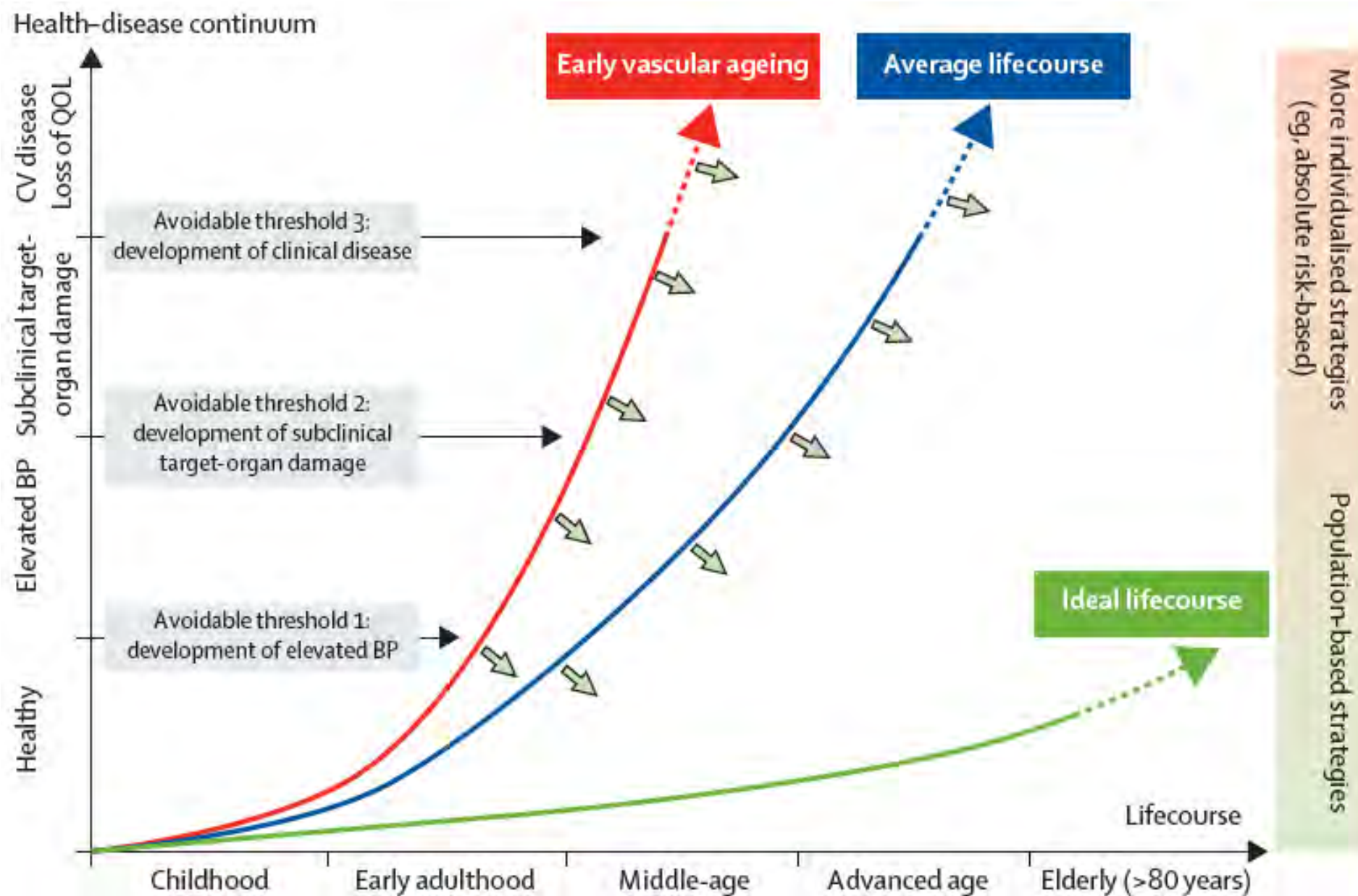


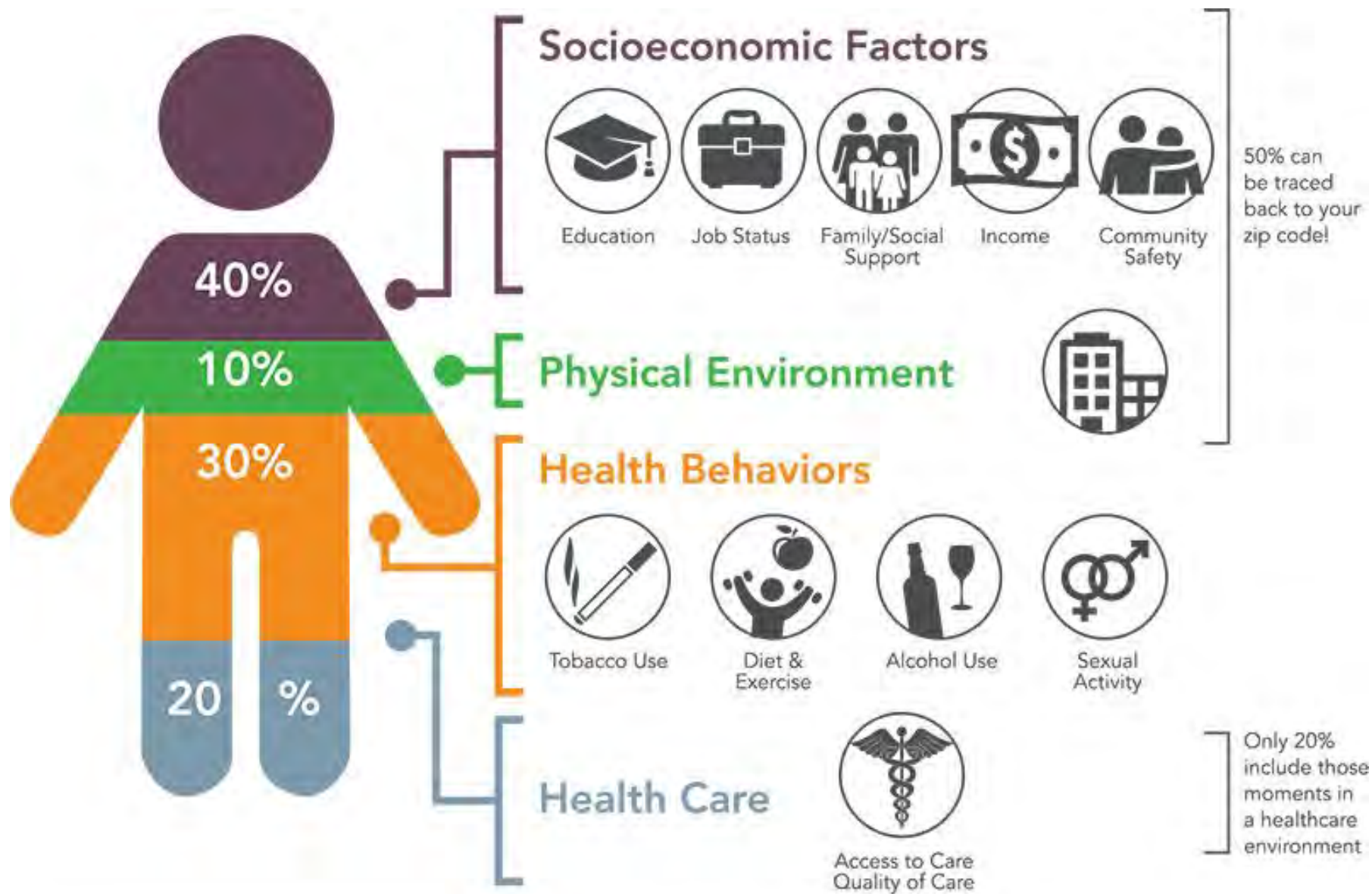
Years from Average Michigan Life Expectancy



Average Michigan life expectancy is 77.7 years (at birth).

Data from National Center for Health Statistics. U.S. Small-Area Life Expectancy Estimates Project (USALEEP): Michigan [2010-2015]. Methodology by Escobedo et al., 2018.





Detroit is Among the Most Disadvantaged

	Detroit	National Average
Children in poverty (%)	52.2	20.4
Income inequity score	-39.6	-1.1
Racial segregation score	40.3	10.9
Unemployment (%)	18.6	6.8
3rd Grade reading proficiency (%)	19.2	46.2
Violent Crime (per 100,000)	1900.4	436.1
Air pollution (PM2.5)	9.7	8.5
Housing w/ Lead Risk (%)	44.2	17.6
Limited access to healthy food (%)	48.3	63.9
Smoking (% adults)	28.9	16.7
Physical inactivity (%)	37.6	23.9
Obesity (%)	43.6	30.4

The Population Health OutcomEs aNd Information Exchange (PHOENIX) Program - A Transformative Approach to Reduce the Burden of Chronic Disease

Steven J. Korzeniewski^{1*}, Carla Bezold², Jason T. Carbone¹, Shooshan Danagouliau¹, Bethany Foster¹, Dawn Misra¹, Maher M. El-Masri¹, Dongxiao Zhu¹, Robert Welch¹, Lauren Meloche¹, Alex B. Hill¹, Phillip Levy¹

¹Wayne State University, ²Detroit Health Department

ABSTRACT

This concept article introduces a transformative vision to reduce the population burden of chronic disease by focusing on data integration, analytics, implementation and community engagement. Known as PHOENIX (The Population Health OutcomEs aNd Information Exchange), the approach leverages a state level health information exchange and multiple other resources to facilitate the integration of clinical and social determinants of health data with a goal of achieving true population health monitoring and management. After reviewing historical context, we describe how multilevel and multimodal data can be used to facilitate core public health services, before discussing the controversies and challenges that lie ahead.

Keywords: Health information exchange; data integration; epidemiology; electronic health record; translational science; social determinants of health.

Correspondence: *skorzeni@med.wayne.edu

DOI: 10.5210/ojphi.v12i1.10456

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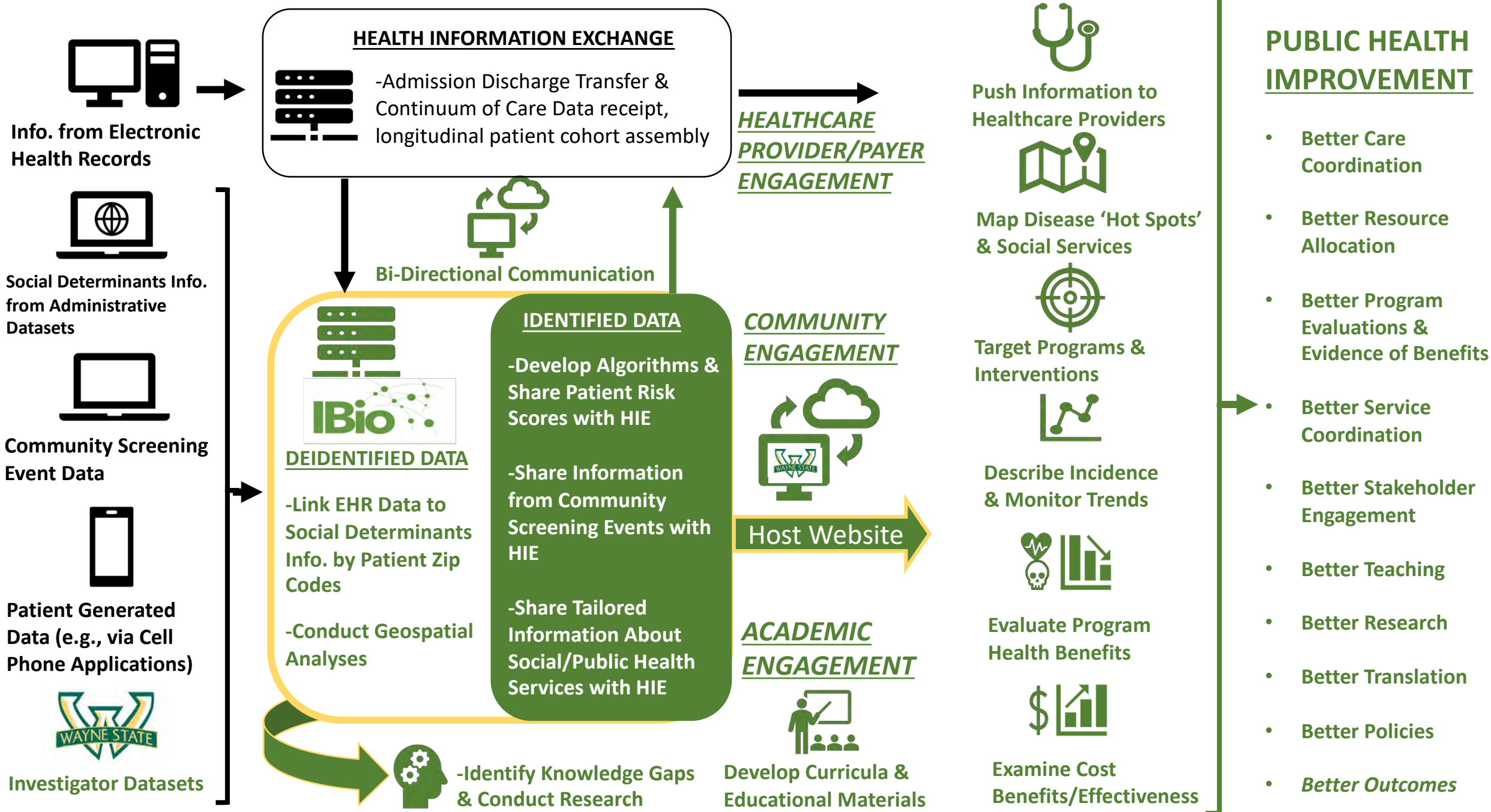
This is an Open Access article. Authors own copyright of their articles appearing in the Online Journal of Public Health Informatics. Readers may copy articles without permission of the copyright owner(s), as long as the author and OJPHI are acknowledged in the copy and the copy is used for educational, not-for-profit purposes.

INPUT

ACTION

OUTPUT

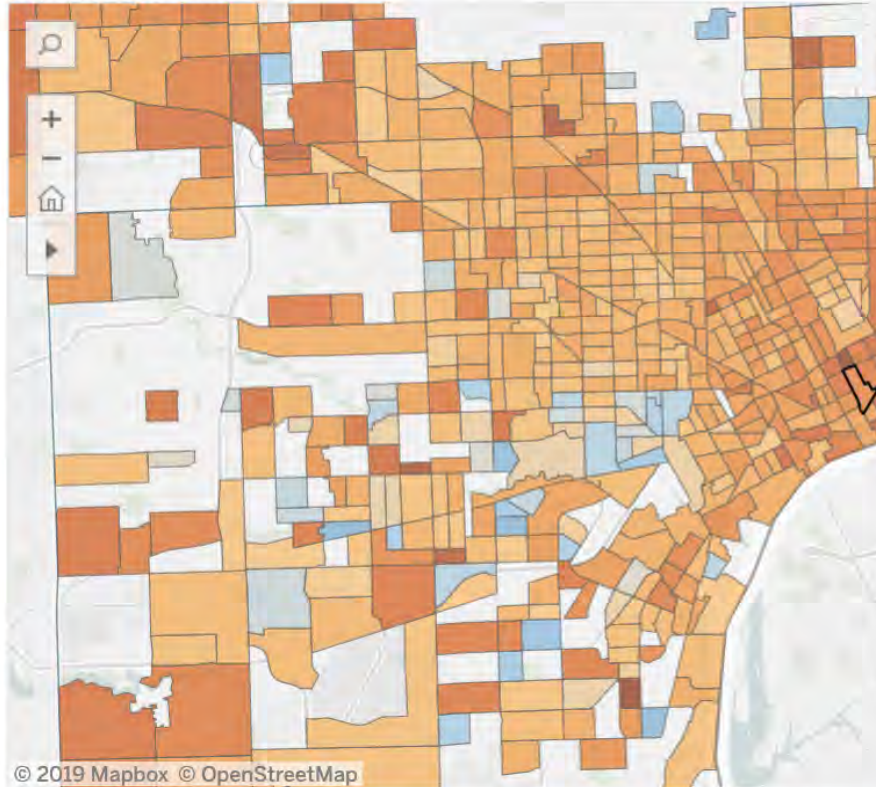
OUTCOME



Hypertension Dashboard Metro-Detroit (Way

Select a Vital Category to Explore: Systolic Blood Pressure (Mean)

Map by Census Tract



Set map legend midpoint as: AHA Guideline (Midpoint: 130)

Tract ID: 26163518900

Number of Patient Records: 4,493

Mean SBP: 137.22

Mean DBP: 83.01

Mean HR: 88.64

Median SBP: 133.00

Median DBP: 81.00

Median HR: 88.00

Census Tract Information

Population: 2,122

Housing Units: 953

Occupied Housing Units (Households): 843

Median Age: 29.30

Population Age 65+: 15.08%

Median Household Income: \$13,764

Families Below Poverty Level: 60.9%

Unemployment Rate: 35.30%

Uninsured Population: 12.40%

Life Expectancy at Birth: 72.10 years

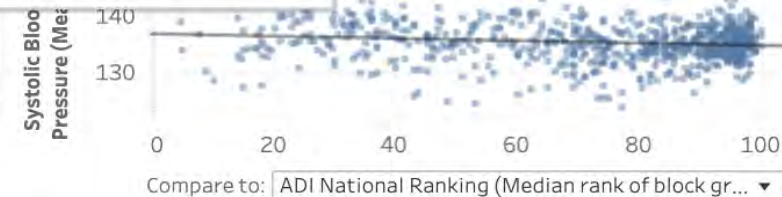
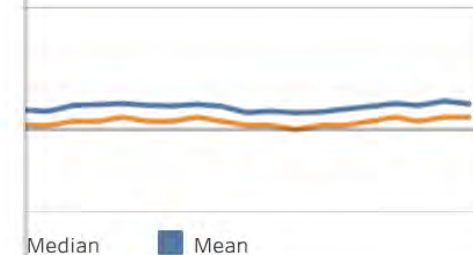
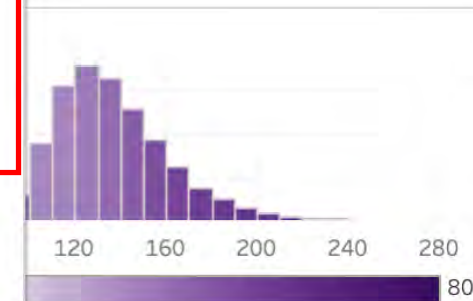
Non-White Population: 96.09%

Renter-Occupied Housing Units: 99.29%

Unoccupied Housing Units: 11.54%

ADI National Ranking (median of block groups within tract): 100.00

ADI State Ranking (median of block groups within tract): 10.000



Filter Data:

Select County

ALL COUNTIES

Select City

ALL CITIES

Date of Arrival

Dec 2016-Feb 2019

(All)

Gender

(All)

Age at Time of Visit

0

118

Race/Ethnicity

☒ (All)

☒ Black/African American

☒ Other Race or More tha...

☒ Spanish/Hispanic

☒ Unknown

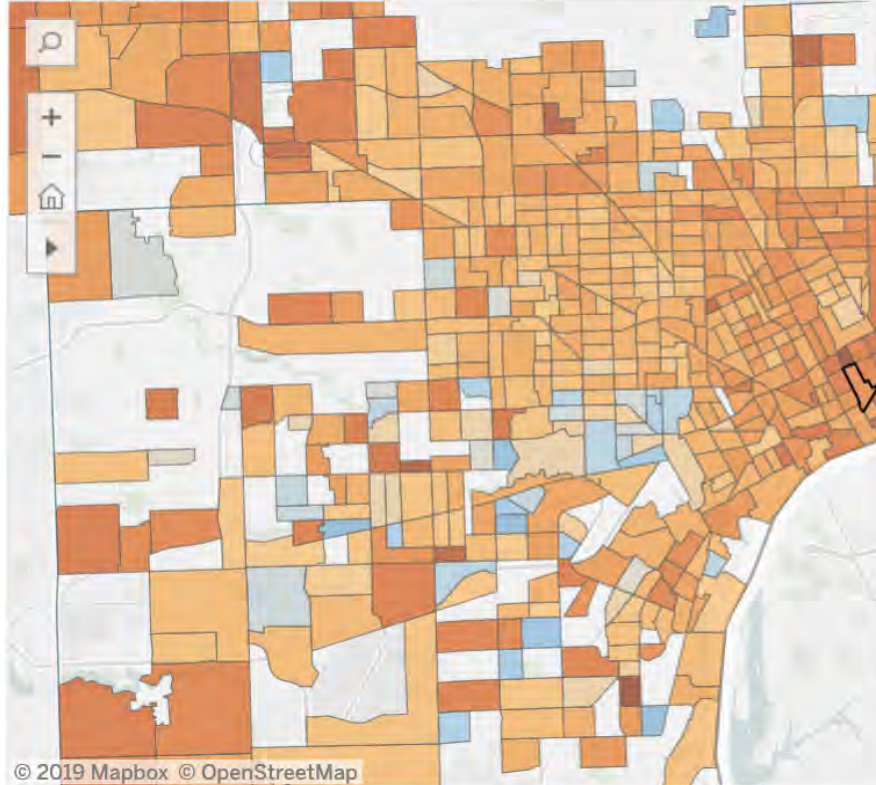
☒ White

Race/Ethnicity	Number of Records	Mean SBP	Mean DBP	Mean HR	Mean Age	Mean Temp	% of Total
Black/African American	422,654	135.20	81.98	89.00	42	36.76	76.61%
White	82,775	135.72	80.33	90.02	46	36.72	15.00%
Other Race or More than On..	31,395	136.51	81.22	87.79	48	36.73	5.69%
Unknown	8,950	134.57	80.85	90.05	42	36.77	1.62%
Spanish/Hispanic	5,916	134.17	81.47	89.49	42	36.72	1.07%
Grand Total	551,690	135.33	81.67	89.11	43	36.75	100.00%

Hypertension Dashboard Metro-Detroit (Way

Select a Vital Category to Explore: Systolic Blood Pressure (Mean)

Map by Census Tract



Set map legend midpoint as: AHA Guideline (Midpoint: 130)



Tract ID: 26163518900

Number of Patient Records: 4,493

Mean SBP: 137.22

Mean DBP: 83.01

Mean HR: 88.64

Median SBP: 133.00

Median DBP: 81.00

Median HR: 88.00

Census Tract Information

Population: 2,122

Housing Units: 953

Occupied Housing Units (Households): 843

Median Age: 29.30

Population Age 65+: 15.08%

Median Household Income: \$13,764

Families Below Poverty Level: 60.9%

Unemployment Rate: 35.30%

Uninsured Population: 12.40%

Life Expectancy at Birth: 72.10 years

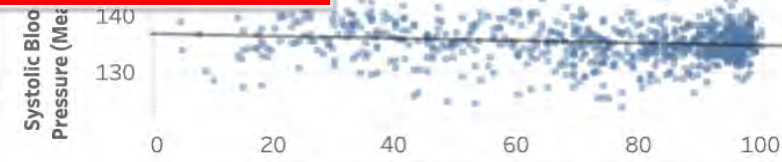
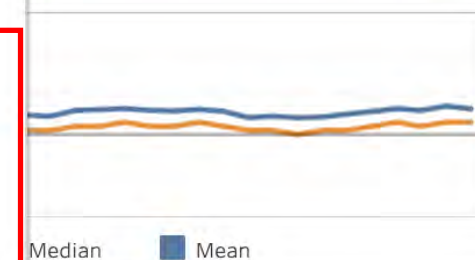
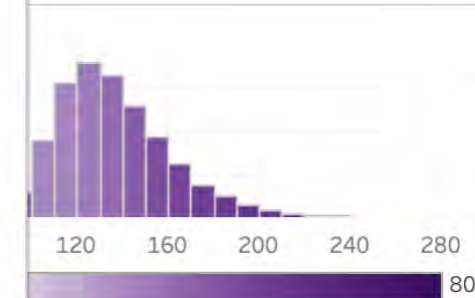
Non-White Population: 96.09%

Renter-Occupied Housing Units: 99.29%

Unoccupied Housing Units: 11.54%

ADI National Ranking (median of block groups within tract): 100.00

ADI State Ranking (median of block groups within tract): 10.000



Filter Data:

Select County

ALL COUNTIES

Select City

ALL CITIES

Date of Arrival

Dec 2016-Feb 2019

(All)

Gender

(All)

Age at Time of Visit

0

118

Race/Ethnicity

☒ (All)

☒ Black/African American

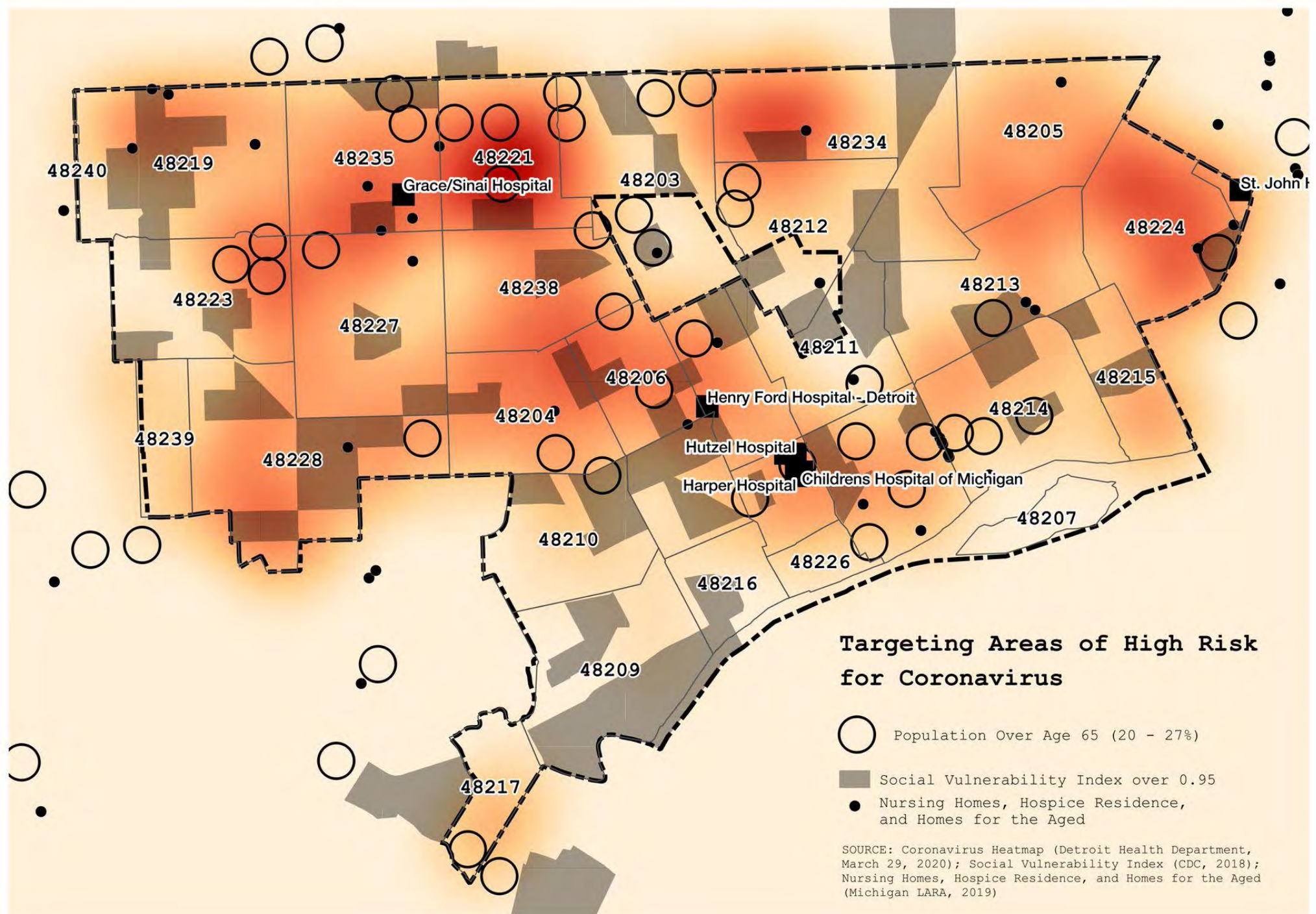
☒ Other Race or More than One

☒ Spanish/Hispanic

☒ Unknown

☒ White

Race/Ethnicity	Number of Records	Mean SBP	Mean DBP	Mean HR	Mean Age	Mean Temp	% of Total
Black/African American	422,654	135.20	81.98	89.00	42	36.76	76.61%
White	82,775	135.72	80.33	90.02	46	36.72	15.00%
Other Race or More than One	31,395	136.51	81.22	87.79	48	36.73	5.69%
Unknown	8,950	134.57	80.85	90.05	42	36.77	1.62%
Spanish/Hispanic	5,916	134.17	81.47	89.49	42	36.72	1.07%
Grand Total	551,690	135.33	81.67	89.11	43	36.75	100.00%





HEALTH

Community-informed strategies improved Detroit's COVID response

By NAIMA © January 27, 2022



Wayne Health Mobile Unit

Patient Visits

93,936

Unique Patients

63,597

Covid Tests

53,917

Negative Results

49,474

Positive Results

4,443

Covid Vaccines

15,235

First Dose

7,023

Second Dose

5,421

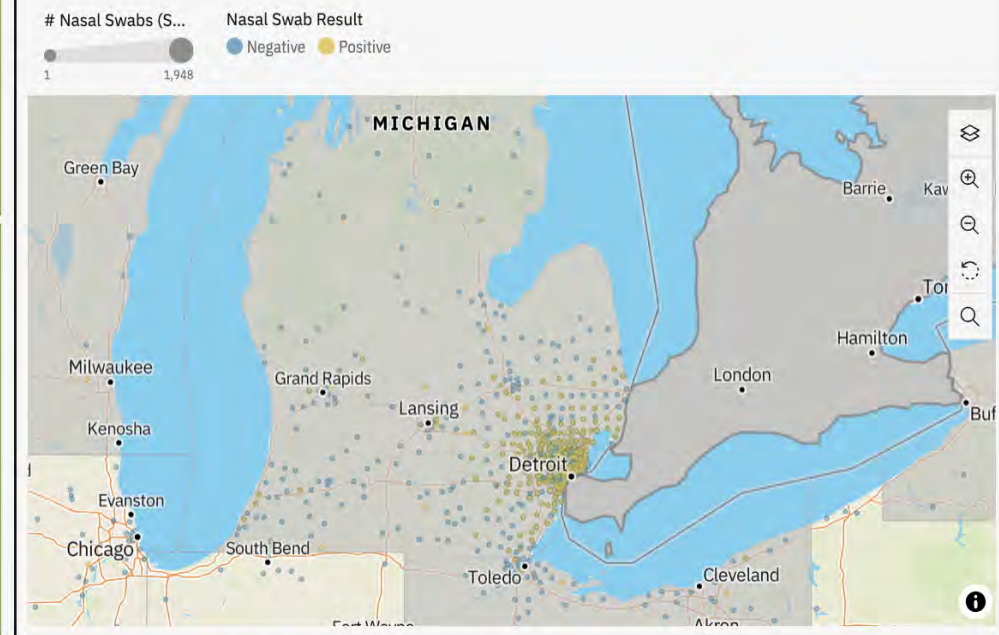
Third Dose/Booster

2,684

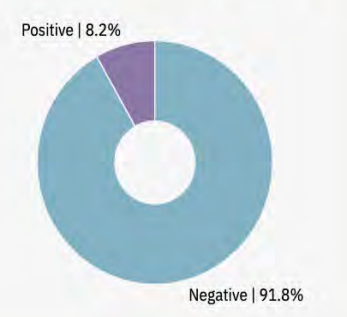
Patients Seen by Month



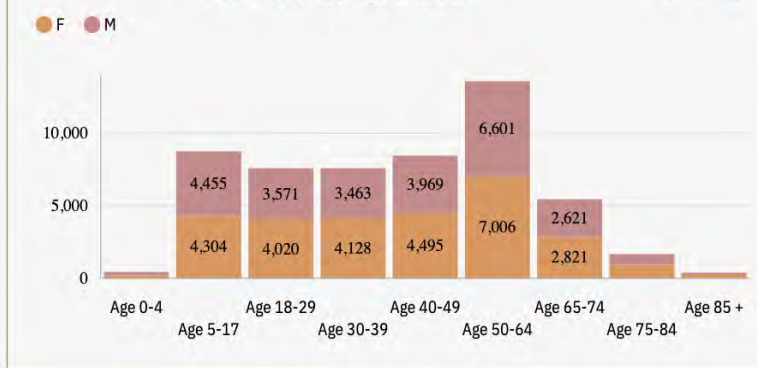
Covid Tests by Zip Code



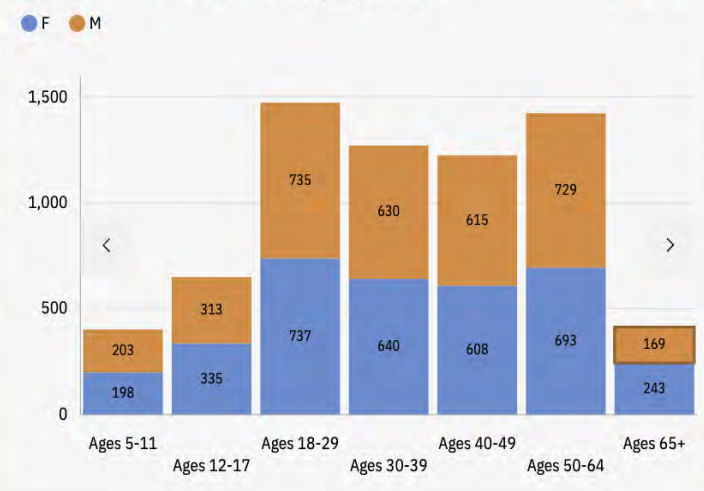
Covid Test Results %



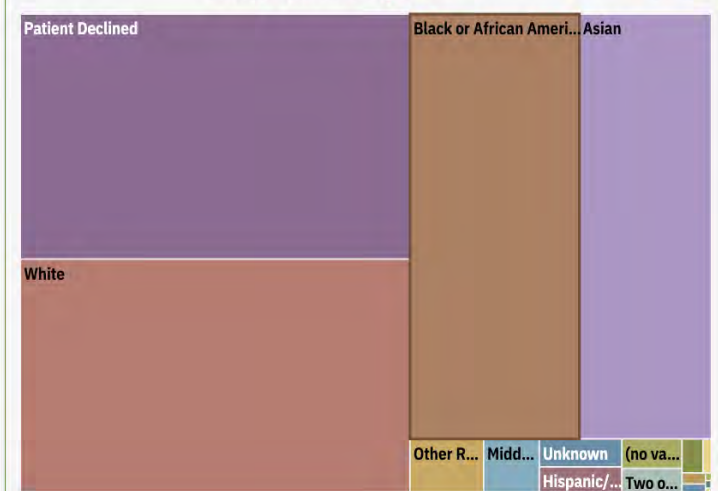
Covid Tests by Age and Sex



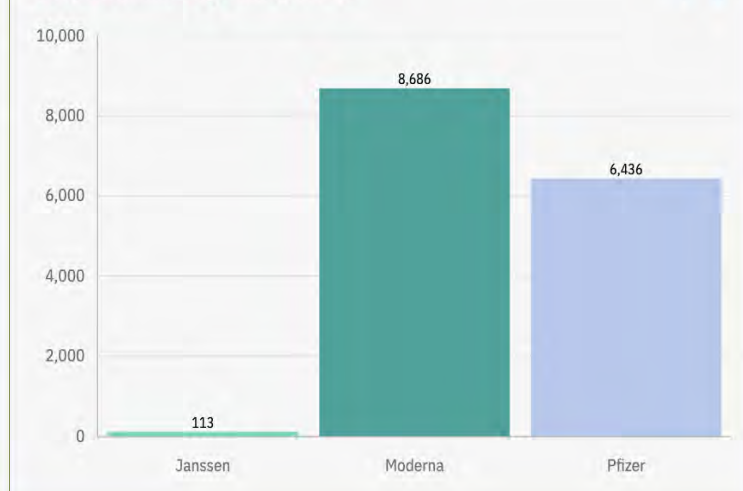
Covid Vaccines by Age and Sex



Covid Vaccines by Race



Covid Vaccines by Manufacturer



Funding: Funding was supplied by donors and non-profit organizations including United Way for Southeastern Michigan, the Community Foundation of Southeast Michigan/Detroit Medical Center Foundation, the Ralph C. Wilson Foundation, Community Organized Relief Effort (CORE), DTE Energy Foundation, Blue Cross Blue Shield of Michigan, and the Cielo Foundation. Michigan Department of Health and Human Services (MDHHS) also collaborated and contributed funding to support further growth and extension of services. A CDC funded program (1817) with the MDHHS Heart Disease and Stroke Prevention Unit allowed for cardiometabolic risk factor screening. In addition, funding for the PHOENIX program was provided by the Michigan Health Endowment Fund and Delta Dental Michigan.



RESEARCH ARTICLE

From pandemic response to portable population health: A formative evaluation of the Detroit mobile health unit program

Phillip Levy¹, Erin McGlynn^{1*}, Alex B. Hill¹, Liying Zhang², Steven J. Korzeniewski², Bethany Foster¹, Jasmine Criswell³, Caitlin O'Brien³, Katee Dawood³, Lauren Baird³, Charles J. Shanley⁴

1 Department of Emergency Medicine, Wayne State University School of Medicine, Detroit, Michigan, United States of America, **2** Department of Family Medicine and Public Health Sciences, Wayne State University School of Medicine, Detroit, Michigan, United States of America, **3** Wayne Health, Wayne State University, Detroit, Michigan, United States of America, **4** Department of Surgery, Wayne State University School of Medicine, Detroit, Michigan, United States of America

* ekmcglynn@wayne.edu

RESEARCH LETTER

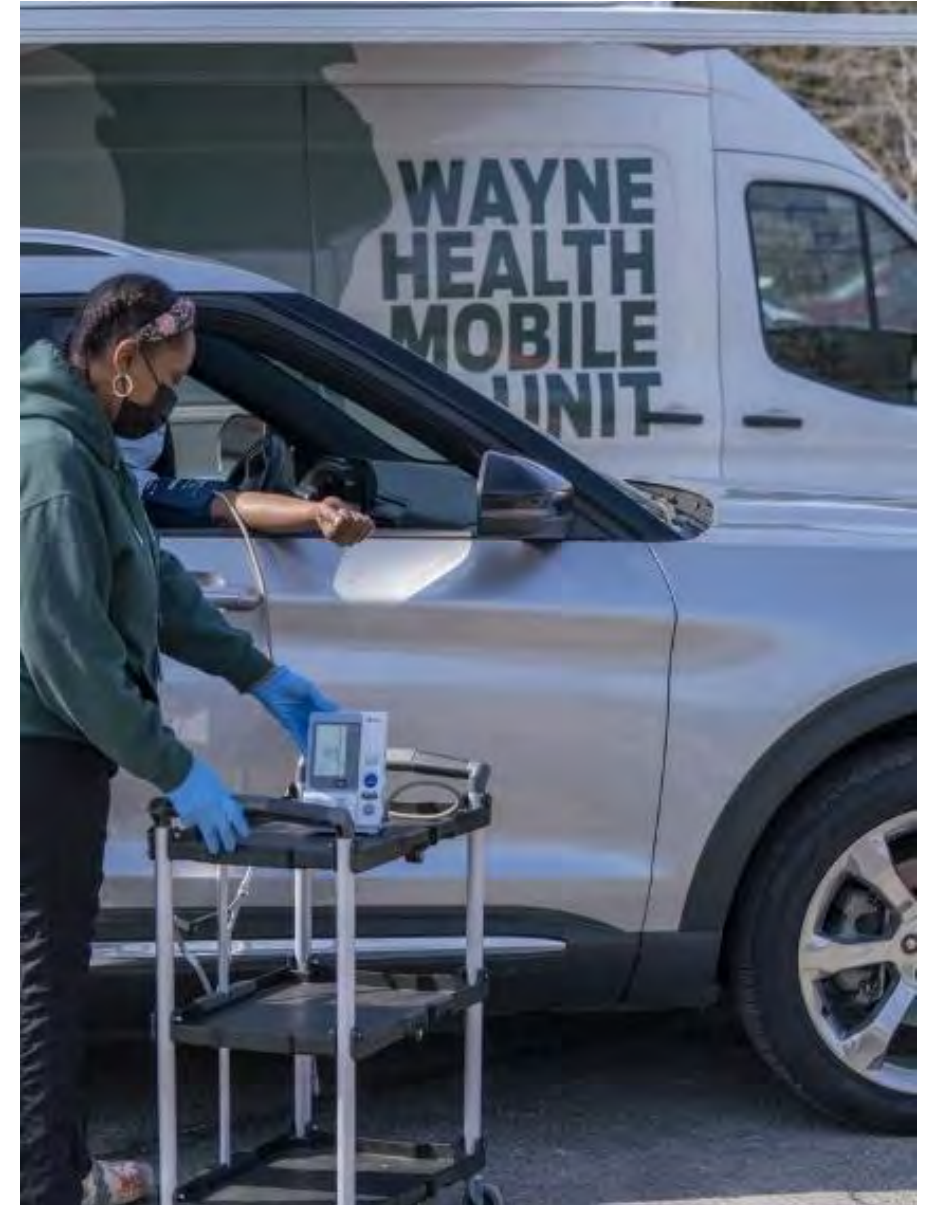
Utilizing Mobile Health Units for Mass Hypertension Screening in Socially Vulnerable Communities Across Detroit

Robert D. Brook¹, Katee Dawood, Bethany Foster, Randi M. Foust, Catherine Gaughan, Paul Kurian, Brian Reed, Andrea L. Jones, Barbara Vernon², Phillip D. Levy³

Nearly half of all adults in the United States have hypertension, defined as a blood pressure (BP) $\geq 130/80$ mmHg. However, both the prevalence (56%) and control rates (18%) are worse in Black patients.¹ Numerous social determinants of health in socially vulnerable populations further exacerbate these disparities while reducing hypertension awareness and access to health care.² Few places exemplify this crisis like the city of Detroit (78% Black race) where hypertension rates are the highest in Michigan (<https://www.cdc.gov/places>) and all census tracts are in health professional shortage areas (<https://data.hrsa.gov/tools/shortage-area/>). As such, the public health importance of large-scale screening efforts to identify the enormous number of individuals with hypertension cannot be overstated.³ We here describe the first-year results using our novel Wayne Health Mobile Unit program developed in

Given the large population serviced (while also ensuring resiliency of the program during cold weather and COVID restrictions), we developed a high-throughput method to offer screening for high BP (defined as $\geq 120/80$ mmHg) beginning in November 2020. Those driving to a site ($\approx 90\%$) rested inside their parked car for ≥ 5 minutes. BP was then measured using an Omron 907XL monitor following a guideline-consistent protocol—up to an average of triplicate upper arm readings (1-minute intervals) using a correct cuff size with the arm supported at heart level (door armrest) and feet resting on the car floor. A minority ($<10\%$) of walk-up patients had seated BP measured in MHU canopy rooms. As privacy was limited, BP measurements were attended and cuffs were placed over long-sleeves when relevant.

All patients are provided follow-up care in the Wayne Health system per individual needs/wishes. Health information, including prior hypertension status, is collected but not currently available for the entire cohort. Individuals with a





Wayne Health Mobile Unit

10,897

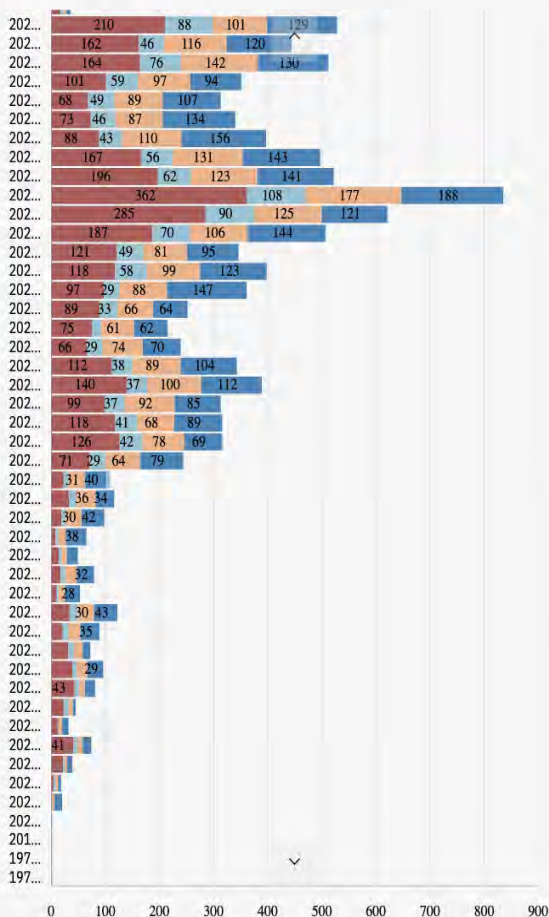
19,222

405



160

- Normal
- Elevated
- Hypertension Stage 2
- Unknown



Screening Labs Ordered

Num_Labs_Ordered	2024-06	2024-05	2024-04	2024-03	2024-02	2024-01	2023-12
CBC W/ AUTO DIFF	0	0	0	0	0	0	0
CBC W/ DIFF	0	0	0	0	0	0	0
CD4 T-CELLS, BLOOD	0	1	0	0	0	0	0
CMP, SERUM OR PLASMA	34	294	228	194	114	80	0
GLUCOSE, SERUM OR PLASMA	0	0	0	0	0	0	0
HBA1C (HEMOGLOBIN A1C), BLOOD	34	289	223	193	114	77	0
HEMOGLOBIN (HB), BLOOD	0	0	0	0	0	0	0
HEPATITIS C IGG AB, QUAL, SERUM	0	0	0	1	0	0	0
HIV 1 + 2, MEANINGFUL USE SET	0	1	0	0	0	0	0
HIV-1 RNA, QUANTITATIVE, PCR, SERUM ...	0	1	0	0	0	0	0
LEAD, BLOOD	0	0	0	0	0	0	0
LEAD, QUANT, VENOUS BLOOD							

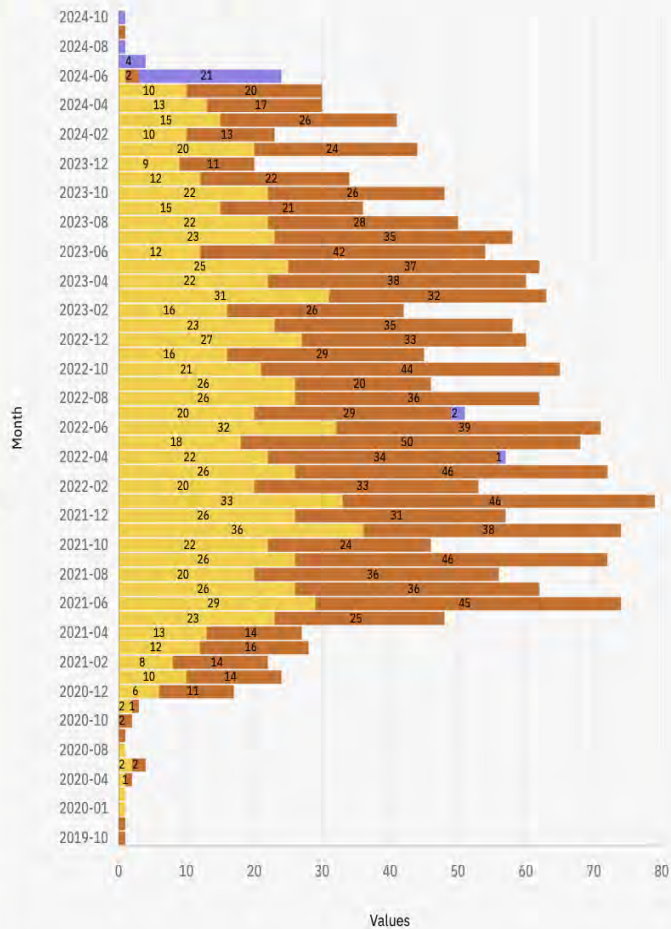
Lab Results

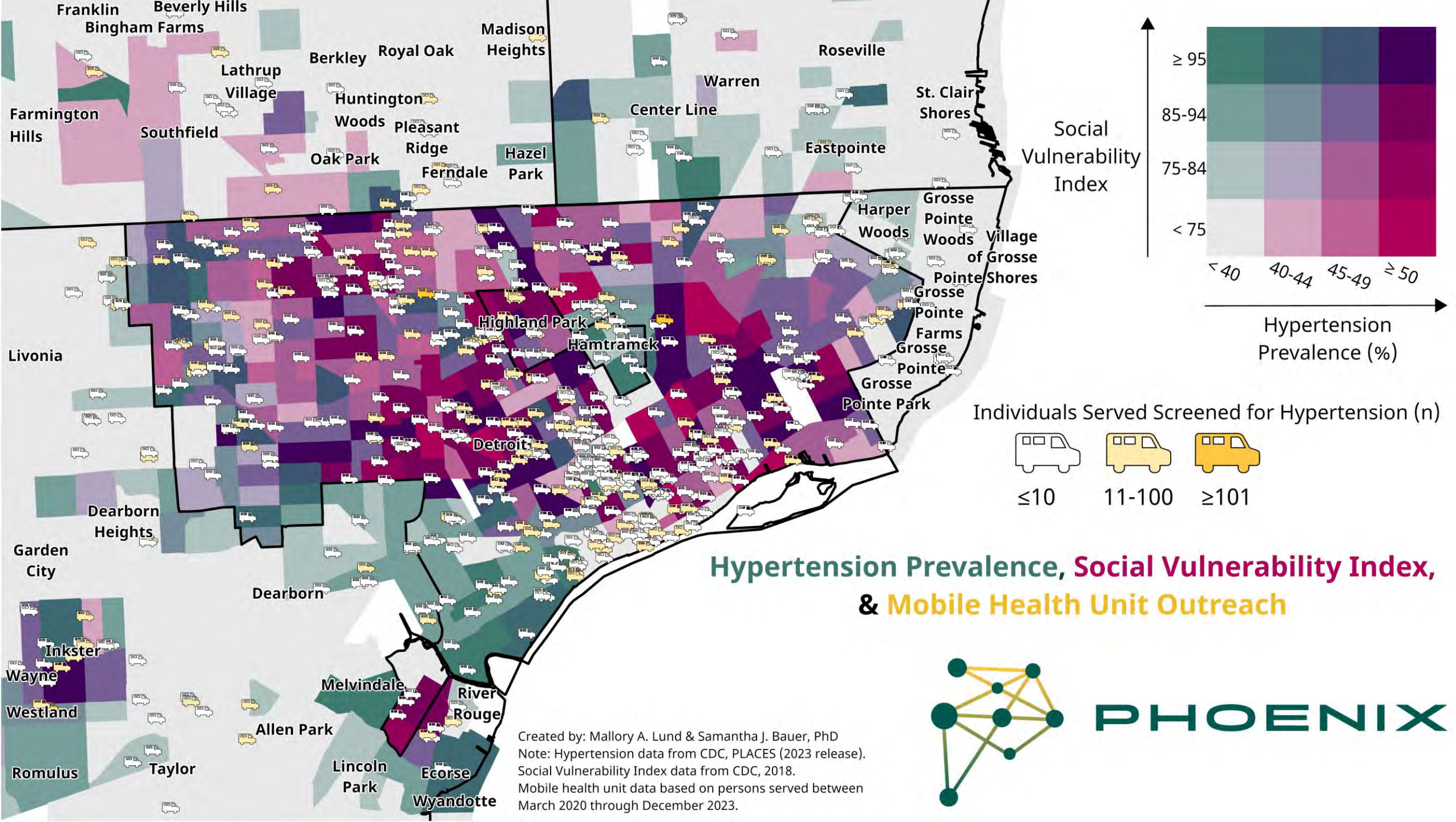
	2021-05				Summary			
	% Abnormal	Num Results	Num Abnormal	% Abnormal	Num Results	Num Abnormal	% Abnormal	
CHOLESTEROL, TOTAL	0	0%	69	3	4%	5,968	1,945	33%
CREATININE	1	5%	69	6	9%	5,943	433	7%
EGFR	ue	(no value)	(no value)	(no value)	(no value)	4,366	1,800	41%
EGFR AFRICAN AMERICAN	10	50%	69	35	51%	1,559	829	53%
EGFR NON-AFR. AMERICAN	5	25%	69	21	30%	1,559	484	31%
HEMOGLOBIN A1C	1	5%	70	7	10%	5,877	791	13%
Summary	17	17%	346	72	21%	25,272	6,282	25%

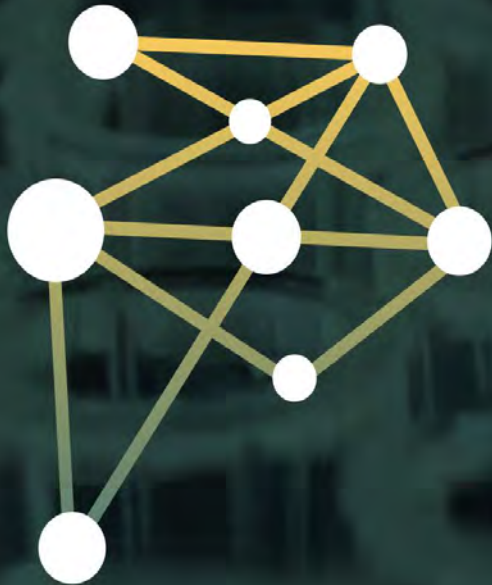
Referred to PCP, Appointment Statuses

Measures

● Num Seen ● Num Cancelled ● Future Appts







PHOENIX

The PHOENIX Project is an undertaking spearheaded by physicians and epidemiologists at Wayne State University. The **Prevalence Profiler** presents up-to-date data on health metrics, from vitals to social determinants, to provide policy makers with a better understanding of the health of our population, and to provide interventionalists with data that enables targeted health care interventions.

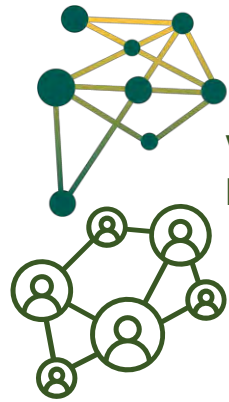
[Walk Through Tutorial](#)[Explore The Data](#)

Source	Data Ingested	Clinical	Social	Built Env.	Natural Env.	Policy Env.	Index	Region	State	County	ZIP	Tract	Block
Brookings Institute	Metro Recovery Index					x	x	x					
US Centers for Disease Control & Prevention	500 Cities & PLACES		x							x	x	x	
	Atlas of Heart Disease and Stroke	x								x			
	COVID-19 Surveillance	x							x	x			
	Drug Overdose Mortality	x							x				
	Drug Overdose Surveillance and Epidemiology (DOSE): Non-Fatal Overdose	x							x				
	Hospital Capacity	x		x						x			
	Life Expectancy	x										x	
	Modified Retail Food Environment Index		x	x								x	
	Monkeypox Surveillance	x							x				
	National Environmental Public Health Tracking Network			x	x					x		x	
	National Health Interview Survey	x	x					x					
	Social Vulnerability Index	x	x	x			x			x		x	
	State Unintentional Drug Overdose Reporting System (SUDOR): Fatal Overdose	x	x							x			
	Tick Surveillance				x					x			
	US Chronic Disease Indicators	x							x				
	US Chronic Disease Indicators: Cardiovascular Disease	x							x				
	US Chronic Disease Indicators: Diabetes	x							x				
	US Chronic Disease Indicators: Reproductive Health	x							x				
	WONDER: Natality	x								x			
City of Detroit Open Data Portal,	COVID-19 Surveillance	x									x		
	Parcels			x						x	x	x	
Columbia University	Drinking Water Contaminants			x						x			
Elelctronic Health Records	Detroit Medical Center - Emergency Department Surveillance	x								x	x	x	
	Henry Ford Health- Emergency Department Surveillance	x								x	x	x	
Diversity Data Kids	Child Opportunity Index						x				x	x	
Environmental Protection Agency	Environmental Justice Screening		x	x	x							x	
	Facility Registry Service			x									x
	Walkability Index						x						x
Federal Housing Finance Agency	High Opportunity Areas		x	x			x					x	
	Underserved Areas		x	x			x					x	
Global Burden of Disease	Police Violence US Subnational Collaborators		x						x				
Google	Mobility Reports			x			x	x		x		x	
Gun Violence Archive	Gun Violence		x	x						x		x	
Harvard Database	Presidential Election Returns					x				x			
Health Resources & Services Administration	Health Professional Shortage Areas	x		x						x		x	
	Medically Underserved Areas	x		x						x		x	

Source	Data Ingested	Clinical	Social	Built Env.	Natural Env.	Policy Env.	Index	Region	State	County	ZIP	Tract	Block
Inter-university Consortium for Political and Social Research	Historic Redlining Scores		x	x		x						x	
	National Neighborhood Data Archive		x	x								x	
Internal Monetary Fund	Gross Domestic Product		x					x					
Landgrid	Wayne County Tax Delinquency & Foreclosures		x							x		x	
MDHHS	MiTracking	x								x			
	Tick Surveillance				x					x			
MI School Data via Data Driven Detroit	MI School Data via Data Driven Detroit		x							x	x	x	
Opportunity Insights, Opportunity Atlas	Opportunity Insights, Opportunity Atlas		x									x	
Oxford COVID-19 Government Response Tracker	Oxford COVID-19 Government Response Tracker					x			x				
Robert Graham Center	Social Disadvantage Index		x				x				x		
SafeGraph	SafeGraph			x								x	
Social Security Agency	Names												
The Delphi Group at Carnegie Mellon University	U.S. COVID-19 Trends and Impact Survey	x									x		
The Eviction Lab at Princeton University	Eviction Estimates		x	x					x	x			
	Proprietary Eviction Estimates			x					x	x			
University of Pittsburg	Project TYCHO								x				
University of Chicago	Energy Policy Institute: Air Quality Index				x	x			x	x			
University of South Carolina	Baseline Resilience Indicators for Communities		x	x						x			
University of Wisconsin Neighborhood Atlas	Area Deprivation Index		x	x									x
US Census Bureau	American Community Survey		x	x						x	x	x	
	Decennial Census		x	x						x		x	
US Department of Agriculture	Food Access Research Atlas		x	x								x	
	SNAP Enrollment		x							x			
US Department of Homeland Security	FEMA: Resilience Analysis and Planning Tool		x	x	x					x		x	
	National Risk Index						x			x		x	
US Department of Housing and Urban Development	Homelessness		x	x					x				
	Low-Income Housing Tax Credit		x	x							x		
	Subsidized Homes		x	x						x	x	x	
US Department of Treasury	Qualified Opportunity Zones						x			x			
Washington University Law	Supreme Court Disputes					x							
	Supreme Court Justice Votes					x							
Wayne County	Medical Examiner	x										x	
Wayne County Open Data Portal	Parcels from Open Data Portal			x						x	x	x	

SURVEILANCE PIPELINE ARCHITECTURE

Coordination



PHOENIX

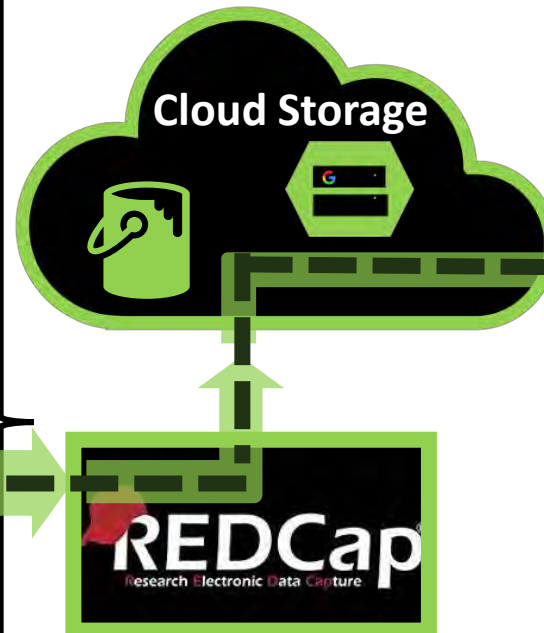
Virtual Data Warehouse, Analytics & Dissemination Platform

Collection

1. [Icon: Building and server rack]
2. [Icon: Building and server rack]
3. [Icon: Building and server rack]
4. [Icon: Building and server rack]
5. [Icon: Building and server rack]
6. [Icon: Building and server rack]
7. [Icon: Building and server rack]

Primary Data
Collection Onsite

Storage & Standardization



Integration, Analytics & Dissemination



Virtual Analytics Hub

Sharing & Dissemination

Bigquery




OMOP Common Data Model



Transformation

Geocoding and Aggregation





☰

User group:

General

▼

METRICS

Browse all metrics >>

medical

social

natural

built

vitals

SELECTED METRIC

Hypertension ?

Survey estimated

2021

Time period:

All data

Last 12 months

Tract 981800, Allegheny County PA

48.8%

very low

≤ 5.6%

median

33.7%

very high

≥ 66.4%

View trends and determinants summary >>

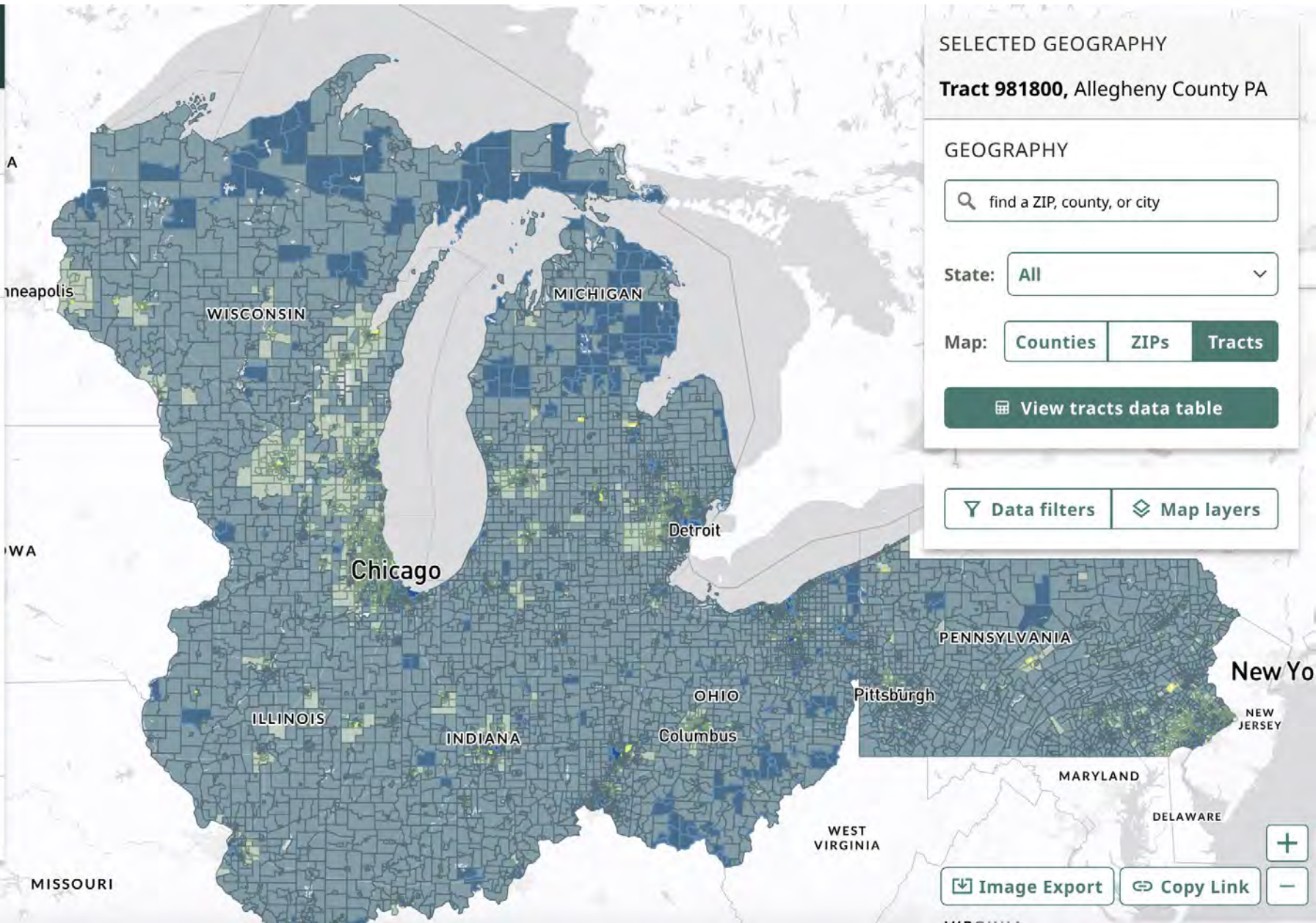
Advanced display:

None

▼

mapbox

DARKHORSE



METRICS

browse: [vitals](#) **medical** [social](#) [natural](#) [built](#)

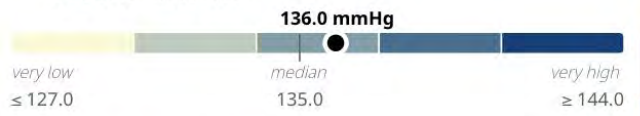
selected geography:

Tract 521900, Wayne County MI
3.1K residents (estimated total population)

Systolic Blood Pressure

Emergency department median

DEC 2018 - MAR 2023



advanced display: Related Metrics

time period: All Data Last 12 Months

click on a related metric to view it on the map

Historic Redlining Score

Jan 2010

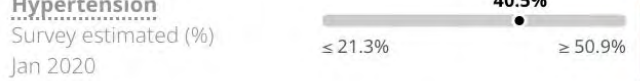


Air Pollution

Environmental Justice Index

(National percentile)

Jan 2022

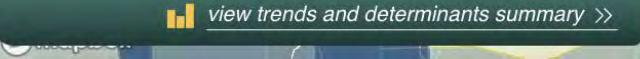


Extreme Income Disparities

Index of Concentration at the

Extremes

Jan 2019



Hypertension

Survey estimated (%)

Jan 2020

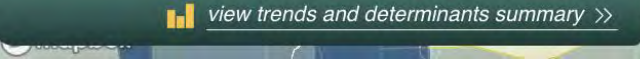


Diastolic Blood Pressure

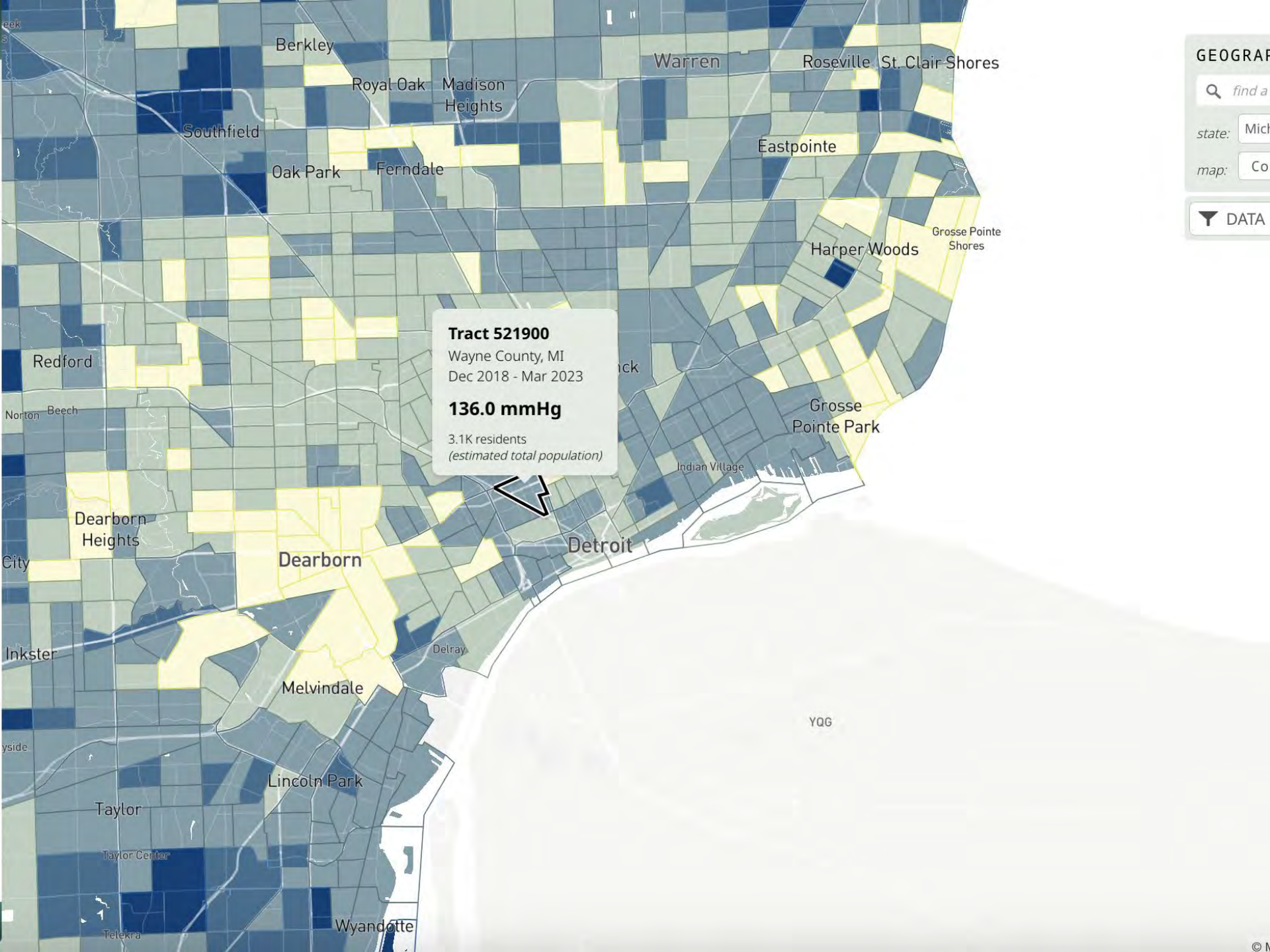
Emergency department

median (mmHg)

Dec 2018 - Mar 2023



[view trends and determinants summary >>](#)



GEOGRAPHY

find a

state: Mich

map: Co

DATA

View trends and determinants summary >>

Advanced display:

Metric by Metric Comparison



METRIC BY METRIC COMPARISON

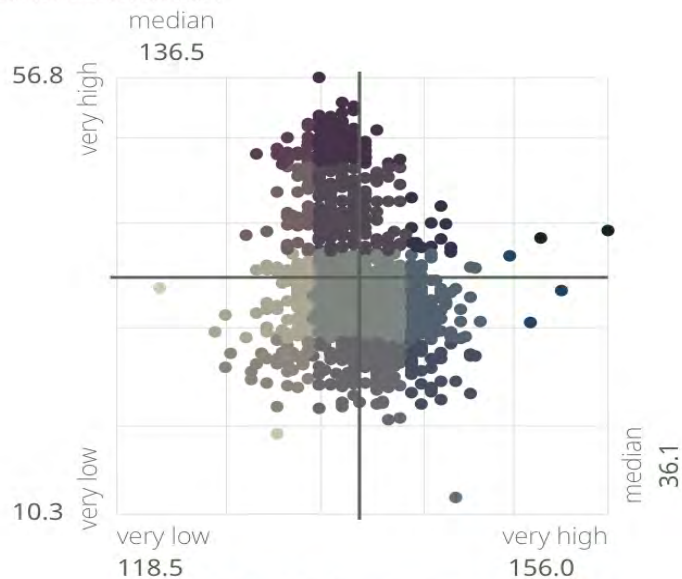
Hypertension ?

Survey estimated



Click an axis to change plotted metric.

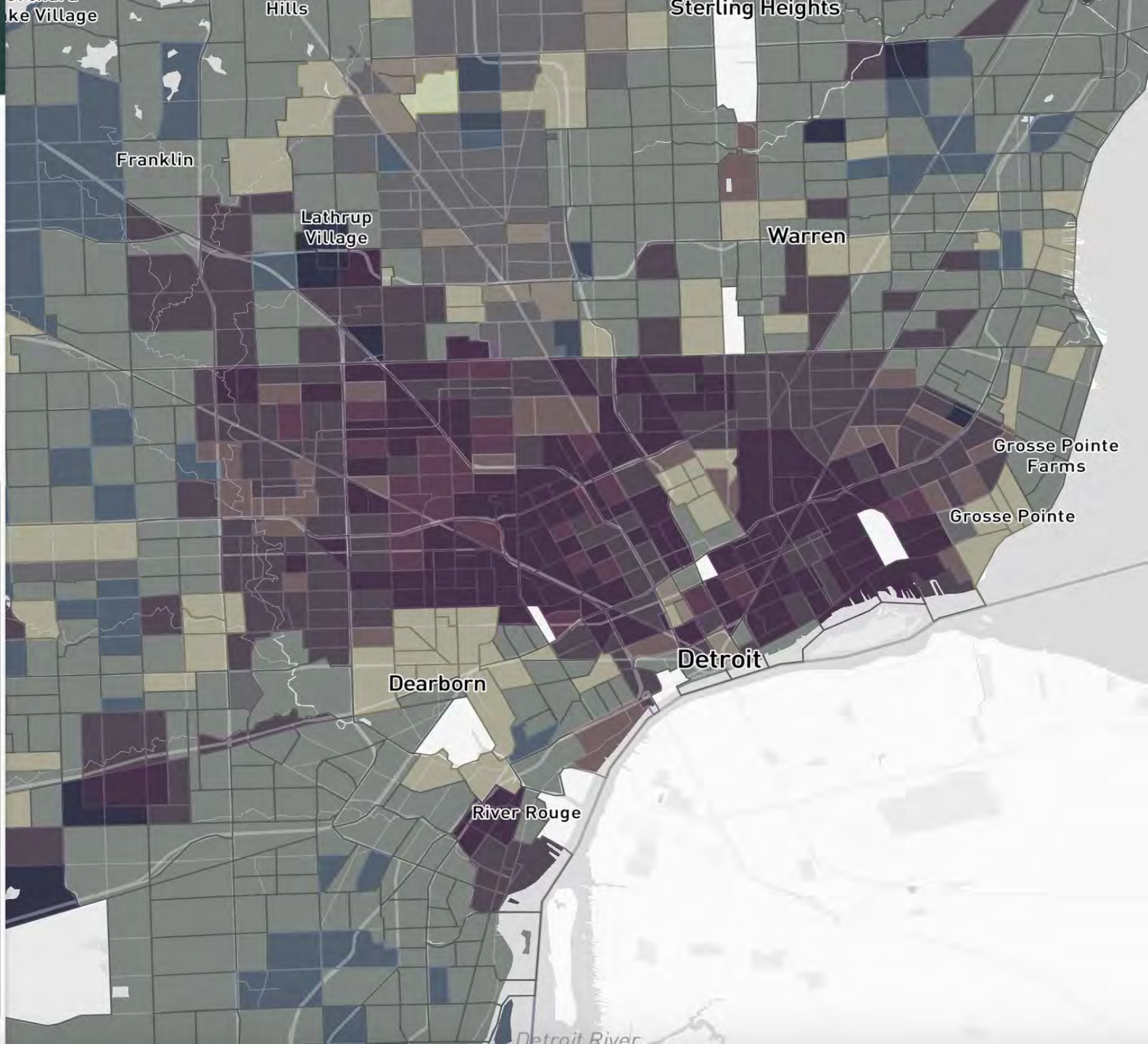
Hypertension (%) ?



Systolic Blood Pressure (mmHg) ?

Swap axis metrics

View other related metrics >>

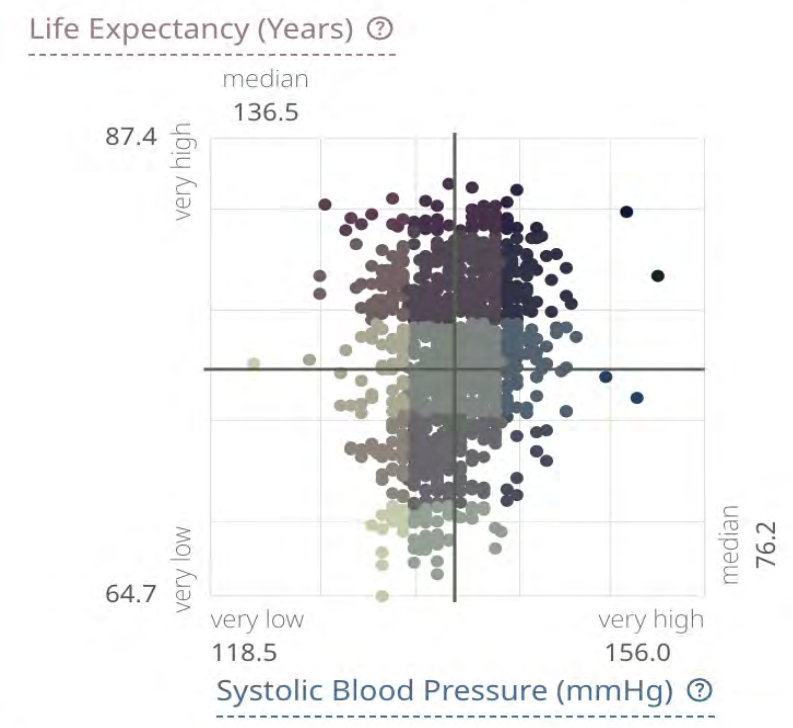


Advanced display: Metric by Metric Comparison ▾

METRIC BY METRIC COMPARISON



Click an axis to change plotted metric.





View trends and determinants summary >>

Advanced display: Metric by Metric Comparison

METRIC BY METRIC COMPARISON

Coronary Heart Disease ?

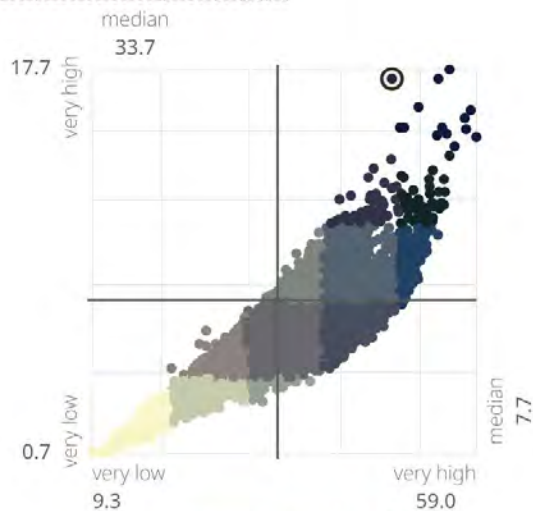
19.5%

Survey estimated

≤ 0.5% ≥ 20.1%

Click an axis to change plotted metric.

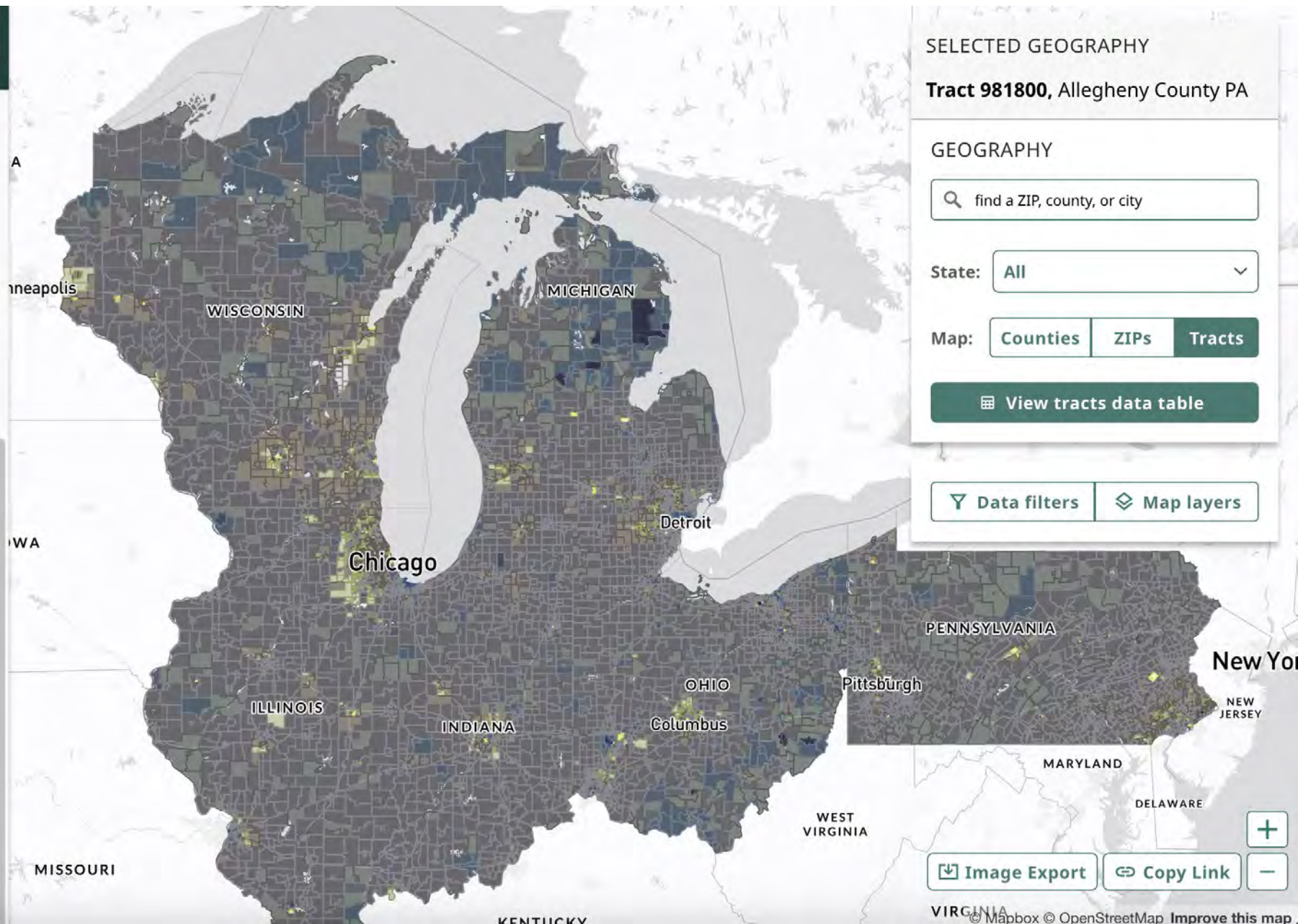
Coronary Heart Disease (%) ?



Hypertension (%) ?

Swap axis metrics

View other related metrics >>



SELECTED GEOGRAPHY

Tract 981800, Allegheny County PA

GEOGRAPHY

find a ZIP, county, or city

State: All

Map: Counties ZIPs Tracts


View tracts data table

Data filters

Map layers

Image Export

Copy Link

 View trends and determinants summary >>

Advanced display: Metric by Metric Comparison

METRIC BY METRIC COMPARISON

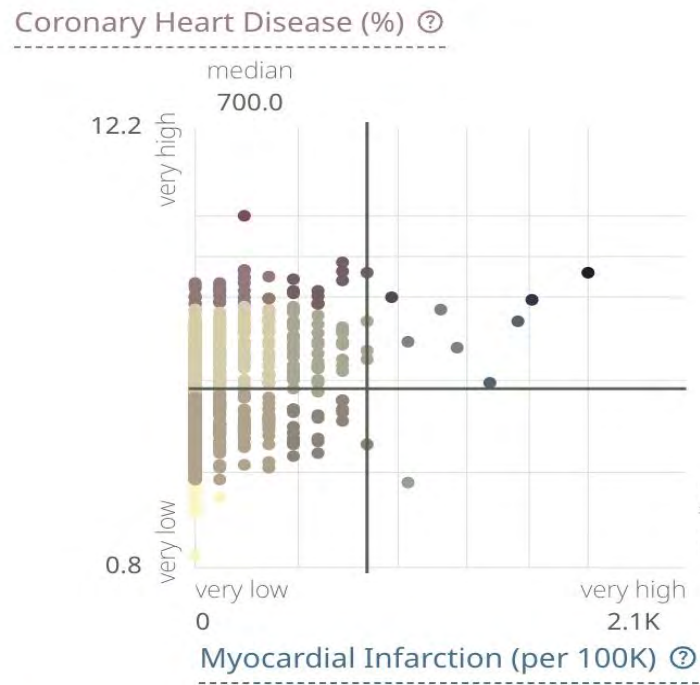
Coronary Heart Disease ?

Survey estimated

≤ 0.6%

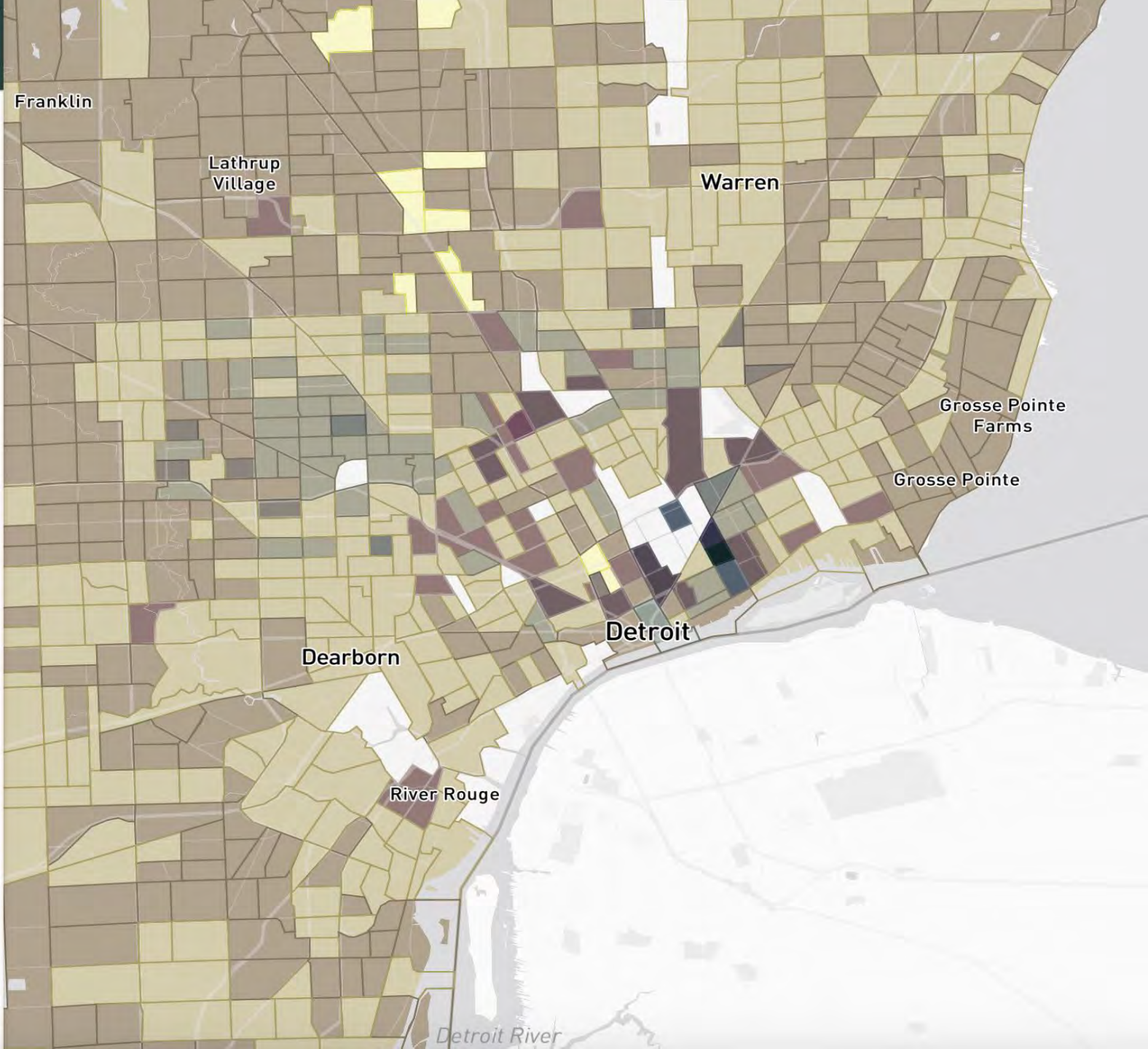
≥ 16.3%

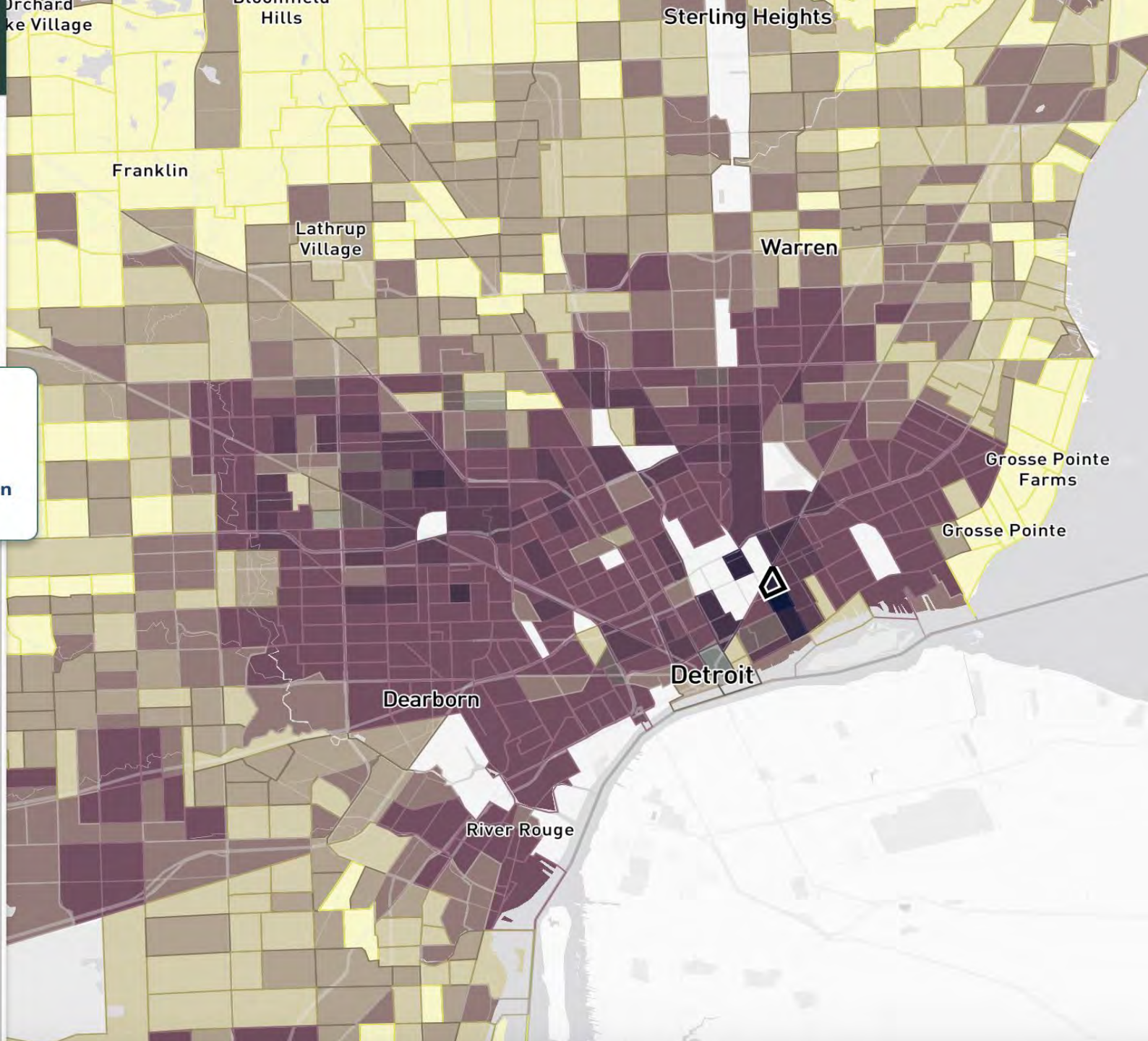
Click an axis to change plotted metric.




Swap axis metrics

View other related metrics >>





 View trends and determinants summary >>

Advanced display: Metric by Metric Comparison

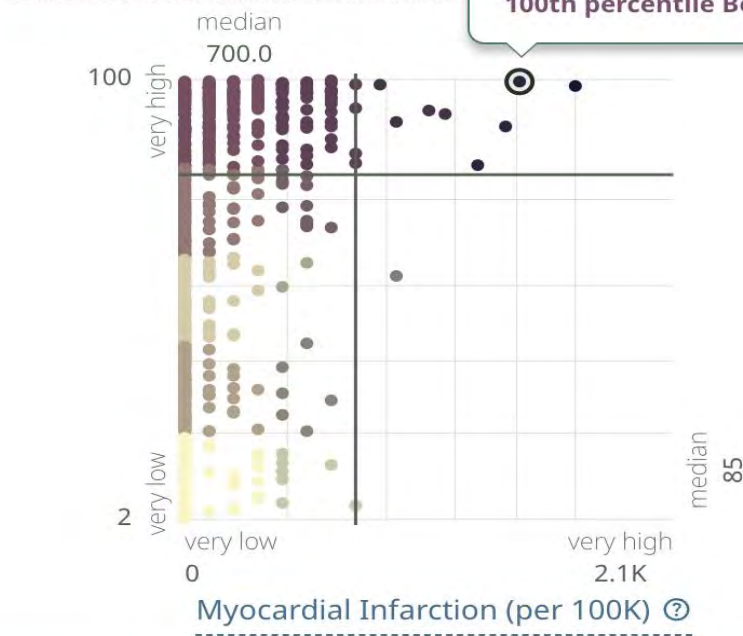
METRIC BY METRIC COMPARISON

Below Poverty ?

Survey estimated

Click an axis to change

Below Poverty (National percent



Tract 516200
Wayne County, MI
Jan 2019 - Mar 2024
1.7K per 100K Myocardial Infarction
100th percentile Below Poverty

Advanced display:

Metric by Metric Comparison

METRIC BY METRIC COMPARISON

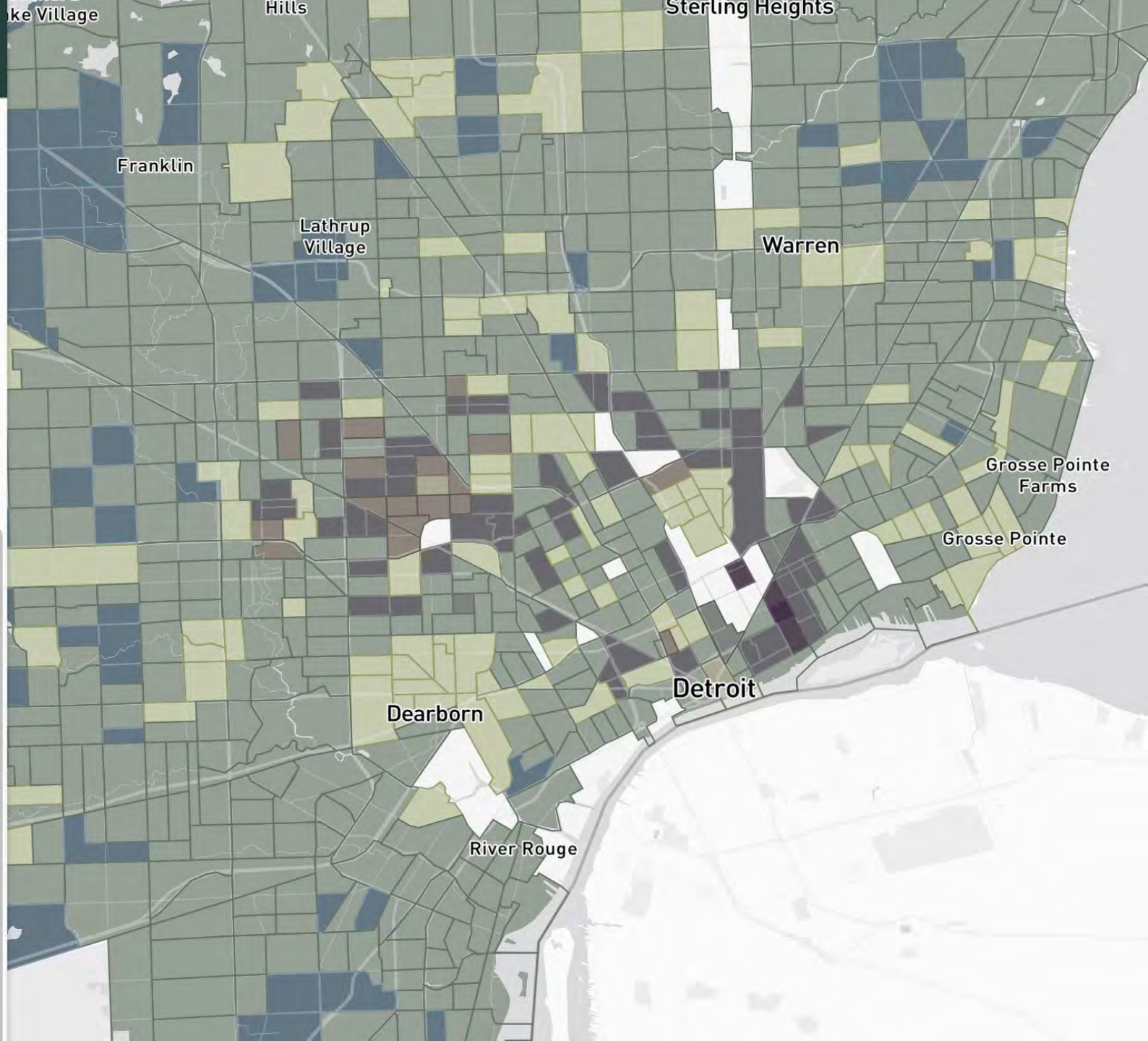
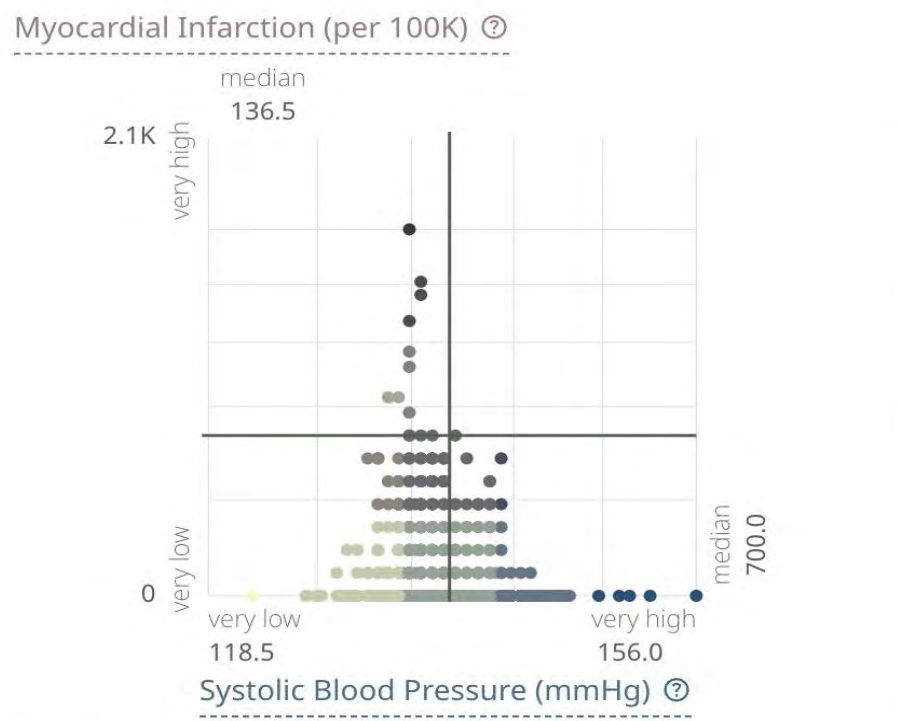
Myocardial Infarction ?

Emergency department rate

< 100

≥ 2.1K

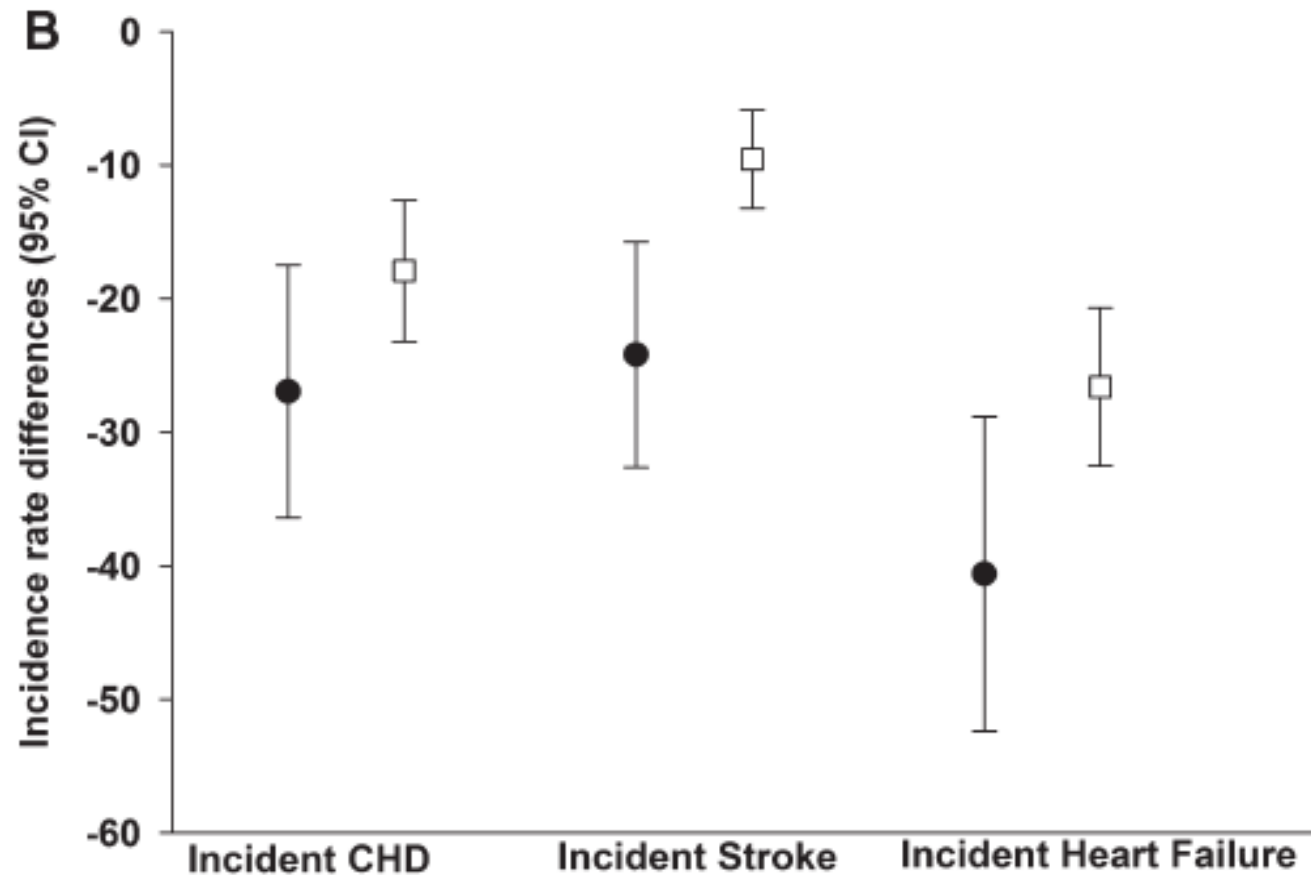
Click an axis to change plotted metric.



Reducing the Blood Pressure–Related Burden of Cardiovascular Disease: Impact of Achievable Improvements in Blood Pressure Prevention and Control

Shakia T. Hardy, MPH; Laura R. Loehr, MD, PhD; Kenneth R. Butler, PhD; Sujatro Chakladar, MS; Patricia P. Chang, MD, MHS; Aaron R. Folsom, MD, MPH; Gerardo Heiss, MD, PhD; Richard F. MacLehose, PhD; Kunihiro Matsushita, MD, PhD; Christy L. Avery, PhD

Population Level BP Reduction of 2 mm Hg



browse: vitals **medical** social natural built

selected geography:

Tract 521900, Wayne County MI

3.1K residents (estimated total population)

Systolic Blood Pressure

Emergency department median

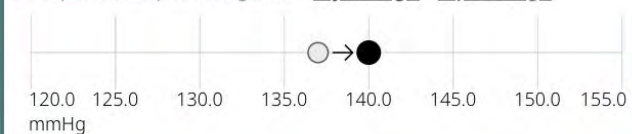
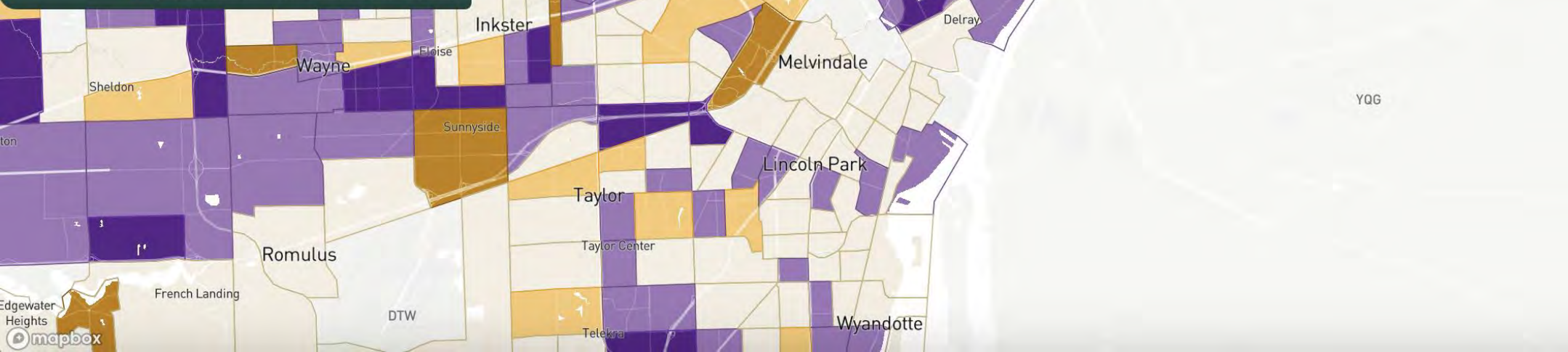
APR 2022 - MAR 2023



advanced display: Time Period Comparison

time period: All Data Last 12 Months

compare time period against: **1 year ago** 2 years ago

[view trends and determinants summary >>](#)

Tract 521900

Wayne County, MI

Apr 2022 - Mar 2023 vs 1 year ago

+3.0 mmHg

3.1K residents
(estimated total population)

 find a

<i>state:</i>	Mich
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<i>map:</i>	Co
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DATA

A photograph of a modern building at night. The building features a large glass facade that is illuminated from within, showing interior spaces. A prominent section of the building is clad in horizontal wooden slats, which are also lit from within, creating a warm glow. The building is set against a dark blue sky with scattered clouds. In the foreground, there is a paved area and some landscaping with small trees and bushes. The overall scene is a high-quality architectural photograph.

plevy@med.wayne.edu



H.C. Michelle Byrd, PhD, MPH

- Cardiovascular Health Epidemiologist - Michigan Department of Health and Human Services (MDHHS), Chronic Disease Epidemiology Section

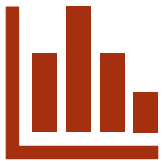
Michigan Improving Cardiovascular Health (MICH) Learning Collaborative Learning Session #1

June 6, 2024

Michelle Byrd, PhD, MPH
Cardiovascular Health Epidemiologist
MDHHS – Chronic Disease Epidemiology Section



Overview



How we use data



**Deep dive into data sources
we have used**

MiBRFSS

CDC/ASTDR SVI

PLACES: Local Data for Better
Health



**If interested in doing
something similar**

Map Room (Univ Missouri Extension)

Background

- In Michigan, heart disease and stroke are in the top 10 leading causes of death.
- Cardiovascular disease (CVD) disproportionately affects a number of Michigan populations especially people of color, lower socioeconomic status (SES), and persons with disabilities.
- Extensive scientific evidence links nonmedical factors, including systemic racism and the lack of economic opportunities, with poor health outcomes and increased mortality rates.
- These social conditions contribute to the increased prevalence of cardiovascular disease.

How We Use Data

- We use data to help us further health equity and to prioritize the reach and impact of programs that improve prevention and management of CVD to populations and communities at highest risk.

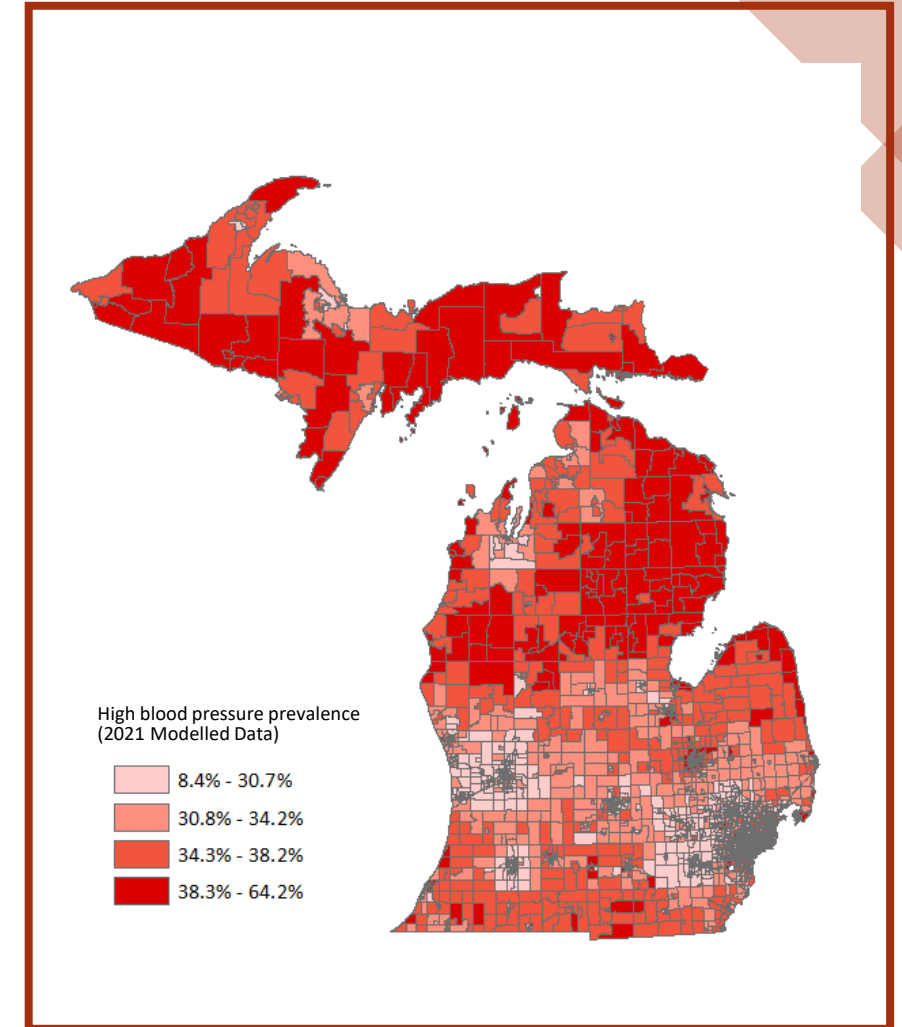
Statewide Estimates

- Priority Populations (Statewide)
- Statewide Estimated Prevalences for Various Chronic Diseases
- Michigan and Demographics/Selected Characteristics

* Priority Geographic Regions on Sub-State Level (Census-Tract Level)

- 1,200-8,000 People
- High Blood Pressure Burden
- Overlaid with Demographics/Selected Characteristics

- Important to remember there not 1:1 correspondence. For example, the same person has chronic disease and a disability



Deep Dive - Statewide

Michigan Risk Factor Surveillance System

Statewide Picture

- Michigan Behavioral Risk Factor Surveillance System (MiBRFSS)
- Why the BRFSS?
 - Only current system that can be generalizable to Michigan adult population
 - Various health behaviors, medical conditions, and preventive health care practices
 - View by disparate populations
- Chronic disease and characteristics that may lead to poor health outcomes

Indicators

- Cardiovascular Disease
- Diabetes
- High Blood Cholesterol
- High Blood Pressure
- Obesity
- Prediabetes
- Food Insecurity Proxy
- Mental Health
- No-Leisure Time Physical Activity (No Exercise)

For example, disability status showed chronic disease disparities across the board.

Adults with Disabilities	CVD	Diabetes	High Blood Cholesterol	High Blood Pressure	Obese	Prediabetes
Total	8.1	9.8	29.4	31.6	35.3	10.0
No (ref)	5.6	7.6	26.8	27.3	32.0	8.7
Yes	14.1	14.7	35.9	43.3	43.8	14.6

Deeper Dive – Census Tract

Community-based level

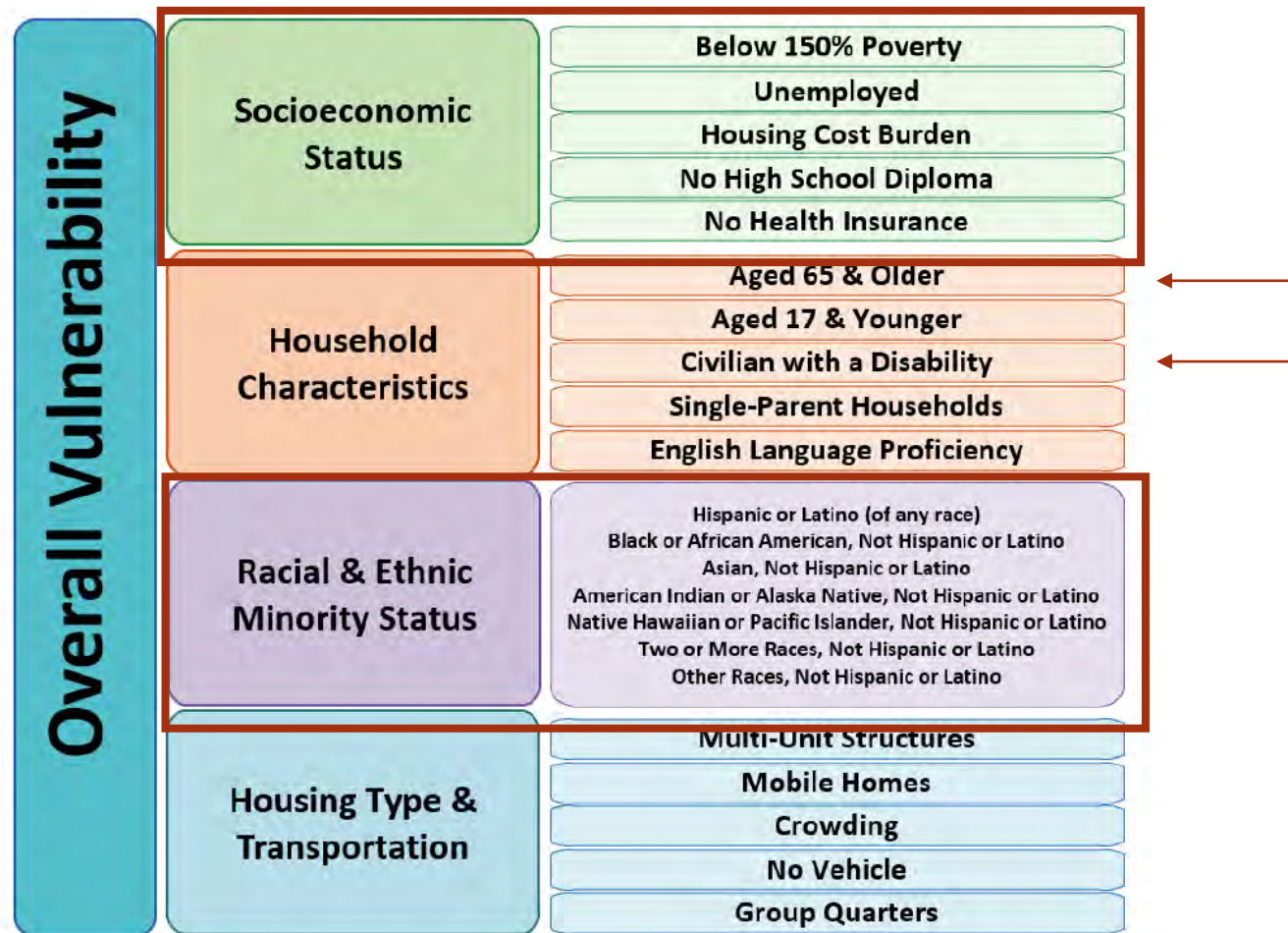
Social Vulnerability Index

Places – Local Data For Better Health

Social Vulnerability Index

- Social Vulnerability refers to the demographic and socioeconomic factors (such as poverty, lack of access to transportation, and crowded housing) that adversely affect communities.
- Centers for Disease Control and Prevention and Agency for Toxic Substances and Disease Registry.
- Large data base with selected indicators and markers specific to Social Determinants of Health (SDOH) barriers.

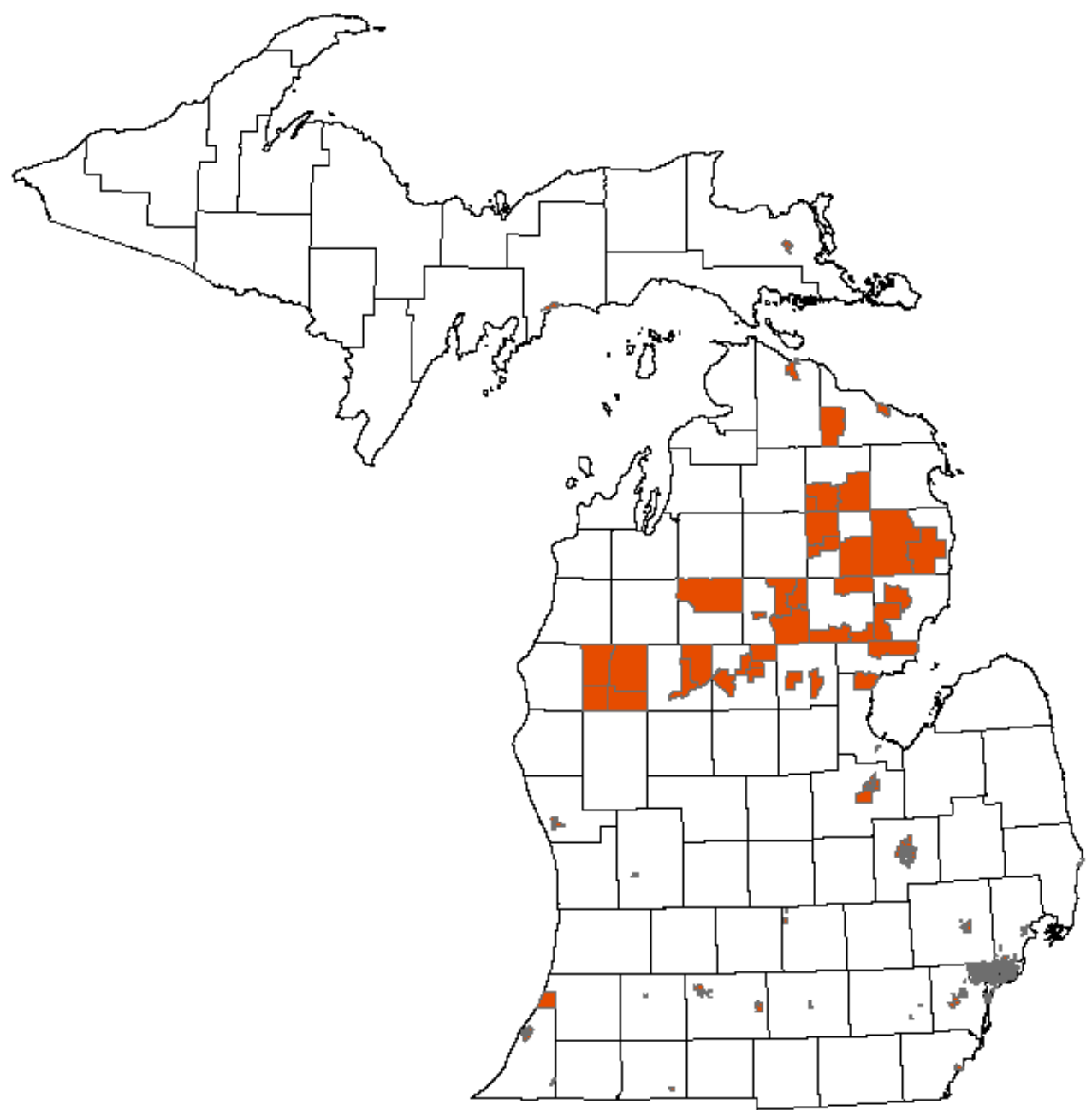
Four Themes



Places: Local Data for Better Health (PLACES)

- A collaboration between CDC, the Robert Wood Johnson Foundation, and the CDC Foundation.
- Provides model-based, population-level analysis and community estimates of health measures.
- Provides health data for small areas.
- Allows local health departments and jurisdictions, regardless of population size and rurality, to better understand the burden and geographic distribution of health measures in their areas and assist them in planning public health interventions.

Highest High Blood Pressure Burden and Worst Socioeconomic Status

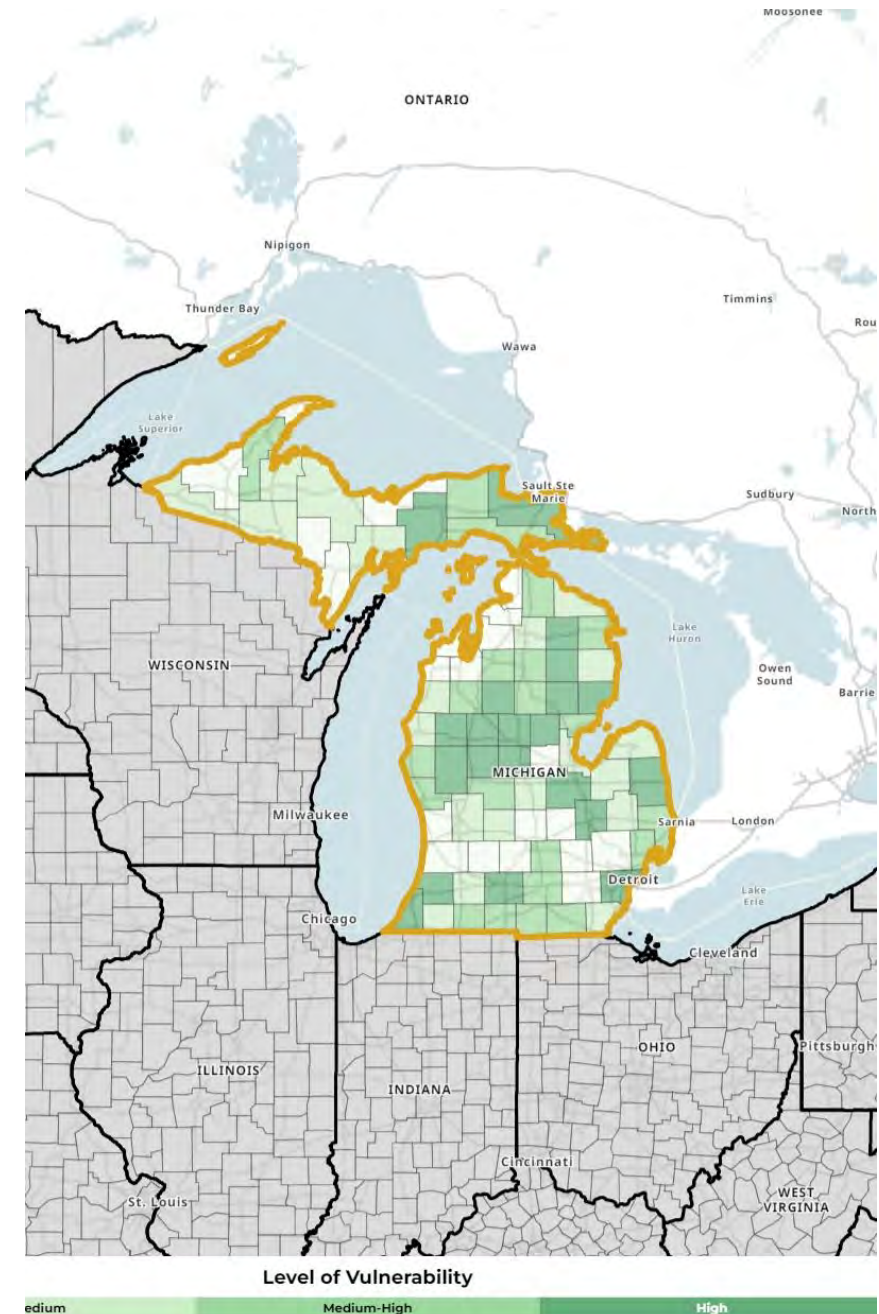


If interested in doing something similar

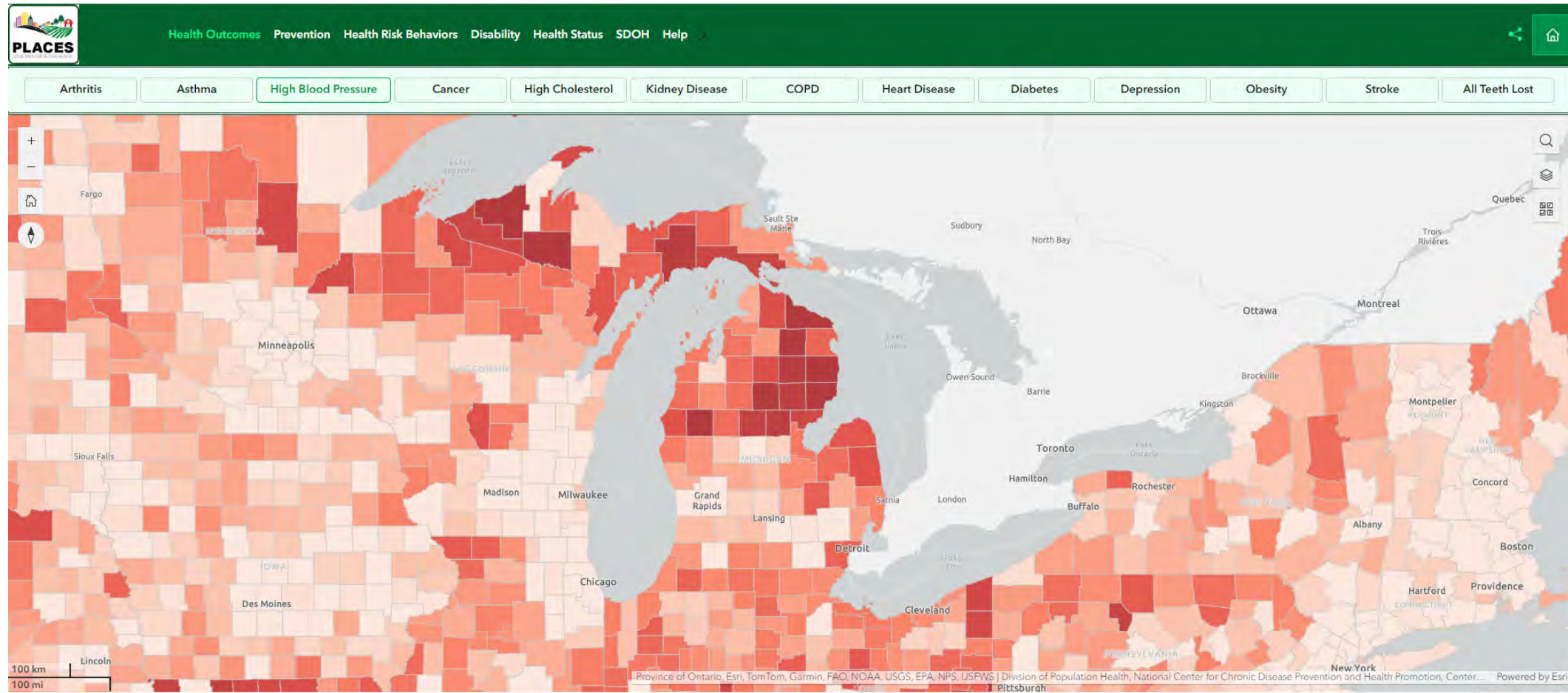
Missouri Map Room

Socioeconomic Status

- CDC/ATSDR Social Vulnerability Index



PLACES – Local Data for Better Health



Data sources: The model-based estimates were generated using BRFSS 2021 or 2020, Census 2010 population counts or census county population estimates of 2021 or 2020, and ACS 2015-2019 or ACS 2016-2020, ACS 2017-2021.

The Note: Estimates are not available for areas shaded in gray. For more information visit <https://www.cdc.gov/places>.

Credit: Centers for Disease Control and Prevention, National Center for Chronic Disease and Health Promotion, Division of Population Health, Atlanta, GA.



Center for Applied Research and Engagement Systems (CARES) at the University of Missouri

- [Map Room](#)

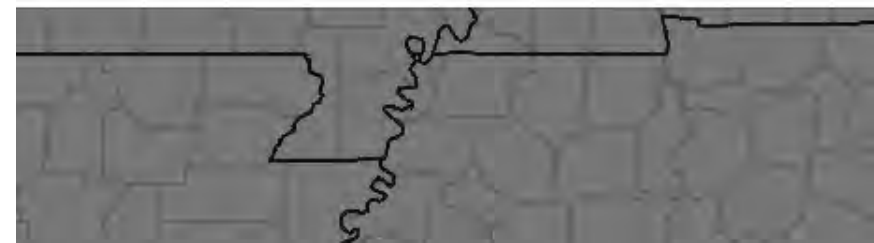


Search Data

Enter a keyword or topic to find data

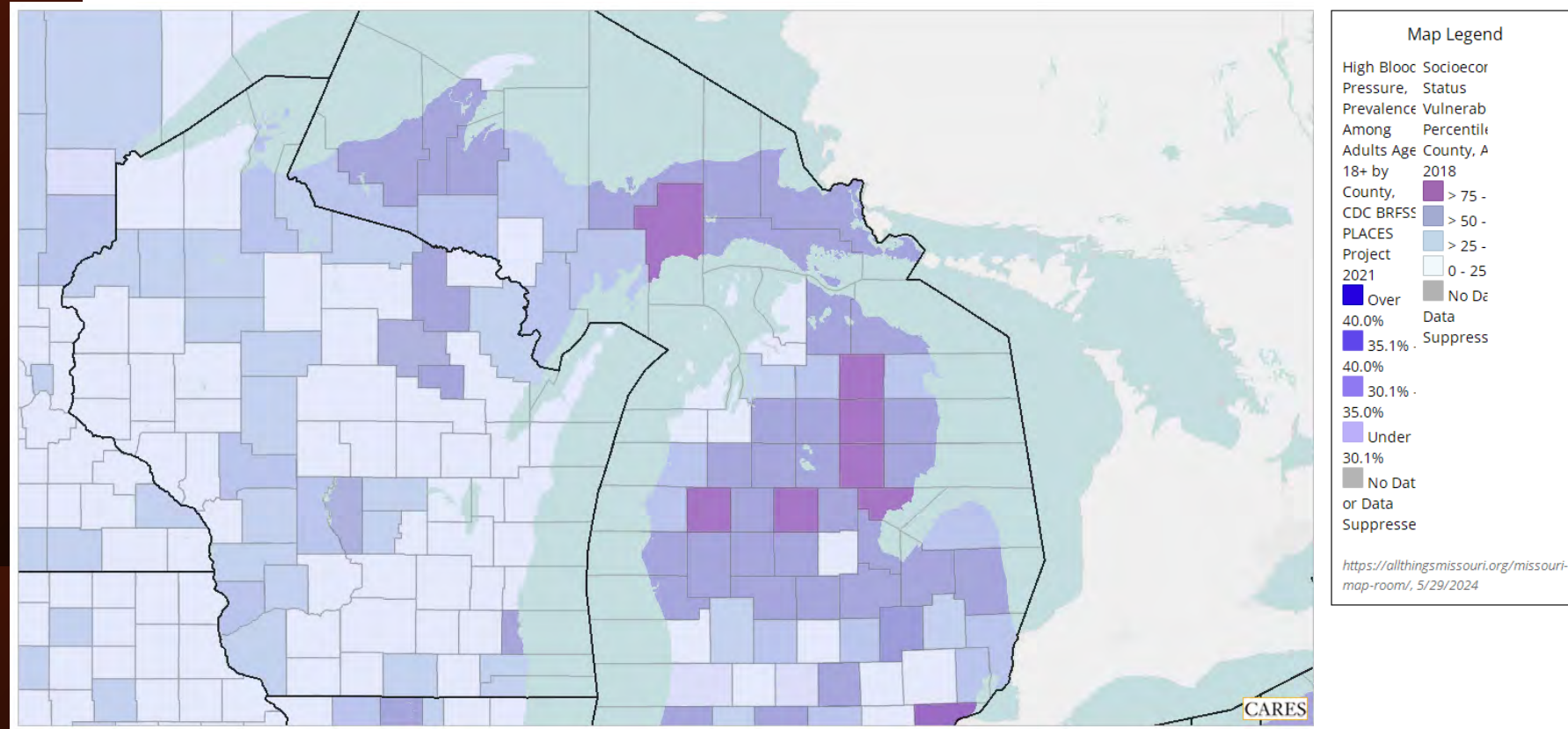
[Browse by Topic](#) | [Browse by Source](#)

A version of our new map room is now available. [Click here to](#)



Missouri Map Room

- Map Room



Sources

- [Michigan Behavioral Risk Factor Surveillance System](#)
- [CDC/ATSDR Social Vulnerability Index](#)
- [Places Local Data for Better Health](#)
- [Map Room](#)

Contact Information



Michelle Byrd, PhD, MPH

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Cardiovascular Health Epidemiologist

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Mentimeter Poll

BASED ON YOUR EXPERIENCE:

4. What additional indicators or sources for data should we consider using for determining cardiovascular disease burden or needs throughout Michigan?

Idk	SDOH Factors	social determinants of health	Polypharmacy	Medication affordability	None	Improve pediatric	All
N/A	I feel I'm intruding	health care access distribution based on location	Family history, pregnancy history	SDOH	consider the link between CVD and Chronic Kidney Disease. GFR and ACR are strong predictors of CVD.	we'd love to give you a demo of the NKFM data dashboards - it focuses on CKD and its risk factors, broken down by county, age, sex, race/ethnicity. Also includes some quality of care and SDOH factors.	SOGIE, specifically transgender persons who are on hormone replacement therapy (HRT). Lead exposure in Detroit.
obesity, SDoH	SDOH	HEDIS, STARS, Healthplan data such as BCBSM	N/A	Not sure	N/A	Nutrition	Population attributed to a primary care physician, access to PCP / Virtual care provider.
SOGIE and sexual health factors, geographic mobility (e.g., does the person travel to go to work or social pretty far?)	None	I am yet learning about the available resources.	Self-report.	Anecdotal data from people in community. Something like NPR StoryCorps highlighting real life experiences.			

5. What is one thing you will take back to your organization and/or to apply to your work? (information or implementation)

Both implementation and information

I plan to check out Phoenix Database

Sources to obtain cardiovascular information, phoenix pop health surveillance database,

Use data from multiple sources to determine areas of focus

The tools shared in today's learning session.

Data base/other resources

Phoenix

The data sources/dashboards shared

The PHOENIX tool

the map room!

PHOENIX

I will be taking back the sites shared today.

USING THE RESOURCES PROVIDED BY THE PRESENTERS SUCH AS PHOENIX AND MISSOURI MAP ROOM

explore the dashboards

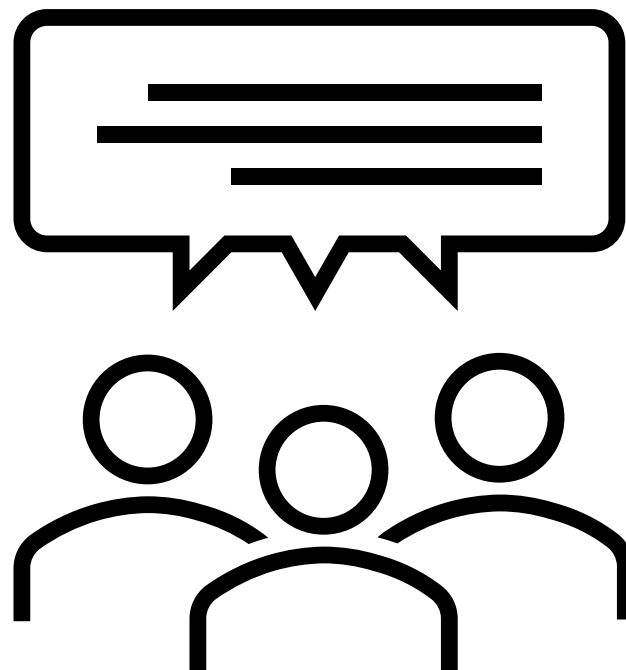
The dashboard and Phoenix are incredibly helpful!

The ability to look at the data shared today to understand geographies to focus outreach.

Not sure if I will have an opportunity to implement but will be sharing the information

Using Phoenix data, and other data sources and using that to brainstorm ideas for communities

Q & A



Close-Out & Next Steps

- Next Learning Session will be held in September
 - Topic: Best practices for hypertension detection, control, and management.
 - Date and Registration link will be provided in follow-up email
 - If you or someone in your network would be interested in being a presenter, please contact Casey Corches – CorchesC@michigan.gov
- Let us know what you thought about today's session by giving us a quick thumbs up or thumbs down!





THANK YOU!



Have a great summer!



For additional questions about MICH
Learning Sessions, contact:

Casey Corches

corchesc@michigan.gov